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PROMETHEUS UNBOUND

A STUDY OF THE
DALLAS/FORT WORTH REGIONAL AIRPORT

February 1975

FINAL REPORT

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PROMETHEUS UNBOUND
A STUDY OF THE
DALLAS/FORT WORTH REGIONAL AIRPORT

Final Report

February 1975

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INTRODUCTION

The Dallas-Fort Worth Regional Airport

The airport is designed around six major runways: four parallel north-south runways and two diagonal, or crosswind, runways. It is claimed that the airport will be able to handle approximately 180 operations per peak hour in instrumental weather (IFR) conditions and well over 250 operations per peak hour under visual (VFR) conditions. The master plan also envisions a pair of 2,000-foot short take-off and landing (STOL) runways with separate facilities. In addition, twelve commercial terminals and a major cargo terminal were planned. These thirteen terminal buildings are to line the nine-mile spine lane that connects the north and south ends of the airport. (See Appendix, p. 2, 3, 4.)

At this writing, two of the four north-south parallel runways are constructed, each slightly more than 11,000 feet in length, and one of the two diagonal runways has been constructed. Four of the thirteen semi-circle shaped terminal buildings have been constructed and the foundation is in place for the fifth terminal building. The terminals are modular, constructed from pre-cast beams, columns, and floors

to enable relatively quick and easy assembly. (See Appendix, pp. 5-6.) Moreover, the airport is designed so that any aspect of planned expansion can be undertaken with minimal disruption to the existing facility. For example, the Airtrans terminal-to-terminal people-mover network can be extended without interrupting taxiways or roadways; similarly, roadways can be expanded without interrupting Airtrans or flight patterns. New runways can be built, as well as the short take-off and landing (STOL) port, without interrupting other parts of the operating facility. The chief project engineer and the airport manager reported that it was relatively expensive to construct the airport to enable expansion with little interruption to the existing operation. Lastly, providing the various subsystems work as advertised, D/FW is not unpleasing to the eye nor overly difficult to use once one is familiar with it.

When we began to investigate the policy process that led to the Dallas-Fort Worth Regional Airport, we did not expect that it would become one of the year's most noteworthy political issues in this area. Media coverage offers unusual opportunity for studying political impact, but it also presents significant difficulties. Access to decision

makers and information, always a problem, is particularly difficult for a publicly sensitive issue. However, we have acquired remarkable amounts of information and our subsequent analysis offers potentially interesting propositions.

The airport began operating January 13, 1974. From inception through construction, and now into the operational phase, the long, often dramatic and colorful sequence of choices leading to D/FW offer an unusual opportunity to examine an array of interesting questions about the cluster of technologies that we label an airport. Our purpose, as reflected in this research report, is to improve our understanding of the plan and design of large technical systems and their effect on society.

We will attempt to trace underlying social, political, and technical assumptions that led to the plan and design for D/FW. We will begin by reviewing the history of the regional airport concept in the Dallas-Fort Worth area. A pattern or cycle is evident revealing ever increasing investment in the same idea. The history of explicit conflict and implicit consensus leading to D/FW provides insight into the constraints and assumptions inherited by the policy makers

and planners as they began to consider the D/FW project. We then attempt to identify some of the basic assumptions held by the policy makers and technical experts regarding the purpose and function of D/FW as those assumptions affected its plan and design. And lastly, when these basic assumptions are compared to the events that have enveloped the airport since it began operating, one can begin to assess the quality of those beliefs about future needs and the utility of present techniques for meeting them.

In general, this research suggests that central questions regarding airport design may revolve around the concept of flexibility. That is, public projects such as regional airports are expensive to build and to operate, requiring considerable commitment from relevant local and regional governmental units and, ultimately, the taxpayers themselves. Thus, our findings suggest that it is especially important that public projects as expensive and committing as a regional airport be designed to readily adapt to unanticipated changes in the economic, social, and political environments. Our analysis should not be seen as an indictment of particularly maladroit expectations and projections.

It is not! Rather, our attempt is to suggest that present methodological techniques for assessing future needs, technical problems, or social conditions clearly are not adequate. In other words, those who invest heavily in a particular vision of the future (like horse #3 will win race #2) are likely to lose heavily. But, one cannot stop; needs must be met, plans laid, and projects (even very large ones) undertaken. Thus, we conclude that such enterprises must be entered from an assumption of maximum flexibility to meet unforeseen developments. This means they must be designed for simplicity to minimize fixed capital costs, overhead costs, and costs of adapting to changed environmental conditions.

Consequently, this research has suggested to us the following propositions that attempt to illuminate the consequences of designs which concentrate on criteria other than those which maximize adaptability. First, we find that the greater the excess capacity (that is, underutilized structural and technical capability), the more likely one is to find political conflict occasioned by the widening gap between expected and observed performance. In this context, we will suggest that D/FW may be overly large for present needs, over-

utilizing intensive technologies which in turn reduce reliability. Such excesses result in relatively high fixed costs and, in the case of D/FW, the gap is further widened by less than predicted revenue. Local leaders anticipated that D/FW would be able to pay its own way, and there is widespread concern, even bickering, with regard to these surprisingly high costs and low revenues. (A similar proposition is forwarded by Zwerling in his study of the Bay Area Rapid Transit project. S. Zwerling, Mass Transit and the Politics of Technology, Praeger, 1974.)

In this regard, litigation between the airlines and the cities of Dallas and Fort Worth is in progress. Though the disagreements focus on whether or not to close Dallas' Love Field to all commercial traffic, it appears that Love Field has become something of a scapegoat. Many financial and governmental leaders in the region, looking for simple, clear answers to the surprising, lackluster performance of D/FW to date, want to believe that all would be well if Love were closed. Our research suggests that this simply is not the case.

Litigation is also in progress regarding the relationship between D/FW and local taxing authorities. From the

perspective of revenue-hungry local governments, the question is: can D/FW provide substantial tax income? Naturally, the airport board and the airport administrators are vitally interested in restraining local communities' power to tax D/FW. At this point, the board and administrative authorities are very concerned about operating deficits and debt service. They are not likely to view kindly local communities taking even bigger slices of their already overburdened revenue pie.

Thus, though it has been operating one year, it appears that conflict concerning D/FW is already manifest. But until some of the questions before the courts are resolved, we can say no more about this proposition than political conflict derives from excess capacity. The outcome of these disagreements over taxing authority well may be important for the survival of the airport, and depending on the outcome in the local courts, we would expect that conflict could demonstrate itself in other ways--perhaps the historical antagonism between the leaderships of Dallas and Fort Worth will once again characterize their relationship.

Our second proposition specifies that those who were part of the decision-making process leading to D/FW thought of the airport more as a means to symbolic and economic ends.

than as a means to meet the needs of commercial aircraft technologies or passengers. In other words, all expected that the airport would have a significant multiplier effect on the region. In more formal language, we are speaking here of the assumption of export-base models. In this regard, the local leadership appears to have gambled that a significant regional airport would increase local exports (from the Dallas-Fort Worth, S.M.S.A.), thereby generating earnings that, in part, would be spent to purchase locally produced goods and services, thus generating still more employment, income, and production in the locale. But this multiplier effect rests on growing national and international economies, and since D/FW has been in operation, the national and international economic situation does not seem to have provided a congenial setting for such growth.

Local expectations may be disappointed in the short term. The Civil Aeronautics Board (CAB) has slowed down its decision regarding airlines' requests for significantly expanded international route structures from D/FW.* Thus, to

*As of this writing, January 17, 1975, Administrative Law Judge Ross I. Newmann recommended that Pan American Airways should be given the exclusive rights to fly international routes from D/FW. Braniff Airlines has already filed a petition before the CAB for reconsideration of the Newmann decision. (Dallas Times Herald, January 18, 1975)

date, the economic and psychological boost anticipated from Dallas' growth into an internationally significant airport, in our opinion, has been slow to materialize. Many seem to believe that air cargo will not increase substantially unless D/FW can obtain improved international routes, which further weakens D/FW's economic effect on the region. But additional study may show that in the long run the airport will fulfill the expectations of the plan.

We cannot predict how the business and political leadership will respond if the desired air routes are not approved or if, once approved, the new routes do not make much difference. But their response, regardless of the particular outcome, will offer evidence relevant for a third proposition.

This proposition, which follows from the previous one, argues that D/FW was planned and designed to be a symbol of modernity, strength, and vitality, in order to reinforce perceptions of the Dallas-Fort Worth area as a rapidly developing world financial and trade center.

A fourth proposition can be derived from the previous two. This notion argues that expensive, technical niceties such as Airtrans' people-movers and the fully automated Telecar

baggage system result more from symbolic than functional needs. The irony is that, because such technical niceties are costly, if they do not work as advertised, they have a double-barreled impact on the symbolic image they are supposed to enhance. First, they add to capital and operating costs which means that budget balancing will be even more difficult if, as in the case of D/FW, short-term revenue predictions are optimistic. Second, the experience at D/FW indicates that such technical systems are particularly noticeable (newsworthy) and if they don't function reliably, the result is unhappy user experiences, bad press, and more unexpected costs. In summary, it may be a considerable risk to undertake large, technically intensive projects primarily intended to stimulate regional political and economic growth.

The Present in Perspective

In the not so distant past, the cities of Dallas and Fort Worth were arch rivals, and cooperation between the two had been the exception rather than the rule. For over three decades this rivalry blocked the development of a single regional airport to serve the two cities as well as the North Texas metroplex. The conflict was fueled by antagonisms and distrusts between strong personalities among the leadership in both communities. One person from Fort Worth must be singled out in this regard--Amon G. Carter, "Mr. Fort Worth." He was the owner and publisher of the Fort Worth Star Telegram, a man who spent a great deal of his time and wealth in the hope of bettering Fort Worth. He was particularly interested in improving Fort Worth at the expense of her sister city, Dallas. It is more difficult to single out such a person from Dallas, but if one had to do so, Woodall Rodgers, Mayor of Dallas from 1939 to 1947, would be that individual.

Attempts to spark a jointly sponsored airport began in 1940 when Governor W. Lee O'Daniel appointed the Texas Aeronautics Advisory Committee to prepare a master plan of airport development for the State. During public hearings,

this committee, supported by the Civil Aeronautics Administration(CAA), proposed that a jointly sponsored airport be constructed between the two cities. The committee felt that it did not make good sense financially to develop both cities' airports--Fort Worth's Meacham Field and Dallas' Love Field. Between October and December of 1940, representatives from both cities met and considered various proposals. At the end of three months of negotiations the two cities jointly agreed to sponsor a military airport in the mid-cities area. But the Fort Worth leadership stubbornly held to its own Meacham Field for the commercial traffic while Dallas just as obstinately argued to retain Love Field for commercial airlines. On December 12, 1940, A. B. McMullen, CAA Director of Airports, indicated that neither city would receive federal funds due to their failure to get together on a joint airport. He went on to say that the government was not trying to high-pressure this project, but the CAA felt it would be a waste of money to develop a class 4 airport at each city.¹

As the possibility of war increased, however, the CAA

¹ Fritz-Alan Korth, A Tale of Two Cities, Princeton University, Senior Thesis, p. 3.

became very interested in constructing a centrally located airport in the Dallas/Fort Worth area that could be used as a military field. It persuaded the city of Arlington (population 4,000 in 1940)--which is almost midway between Dallas and Fort Worth--to sponsor such an airport. Braniff Airlines and American Airlines jointly purchased the necessary land and deeded it to Arlington, which was to be responsible for operating and maintaining the airport.² This agreement between the city of Arlington and the CAA shocked both Dallas and Fort Worth out of their complacency. Once again, negotiations were renewed by both cities and the CAA.

Between late 1940 and mid-1943, several meetings were held in which all interested parties attempted to resolve the impasse regarding location and control of the proposed airport as well as the future of Love and Meacham Fields in the scheme of the area's overall airport needs.

Fort Worth's proposal called for construction of the terminal building on the west side of the airport, while Dallas wanted the terminal in a more neutral location at the north end of the airport. A verbal skirmish between the two

² American Airlines tended to side with Fort Worth throughout the airport controversy, perhaps because Amon G. Carter was on its Board of Directors.

cities ensued, and Mayor Woodall Rodgers of Dallas was at the apex of the controversy. Rodgers complained that "construction of the project along the lines proposed by Fort Worth, with the building backing toward Dallas, would be considered a personal insult toward the people of Dallas."

(Dallas Morning News, 9 Jan. 1942.) He went on to say:

If the CAA does follow (Amon) Carter's dictation, however, I think a statue should be erected to him atop the administration building and the airport should be named 'Carter Field' to complete the insult to Dallas. (Dallas Morning News, 10 Jan. 1942.)

The history of the controversy suggests that the personal antagonism between the two community leaders contributed significantly to the cities' problems. On the other hand, it provided each with a ready-made "fall-guy." Both men, largely for selfish reasons, attempted to influence the CAA in favor of their respective communities and ignored the overall needs of the areas. But more importantly, this initial controversy over the site selection for a "regional" airport was to carry over to the following decades. The scenario was always the same.

The airport, proposed by the CAA in 1940, was completed and approved by them on July 2, 1943. Thus Midway Airport, under Arlington's control, began operation.

The Greater Fort Worth International Airport

After prolonged negotiations and repeated failures, both Dallas and Fort Worth began to formalize their own plans in late 1943 to make their individual city's airport the "super airport" of the north Texas area. In Dallas, there was even talk of building a downtown airport, possibly on reclaimed Trinity River bottom land. In the meantime, according to one of our interviewees, some airlines were tiring of landing first at Fort Worth's Meacham Field then taking off for the 30-mile flight to Dallas' Love Field.

Four years later, in October, 1947, the city of Fort Worth announced that Arlington's Midway Airport would be developed jointly with the airlines as Fort Worth's major airport--a proclamation that completely surprised the people of Dallas. This unexpected move had been engineered by Dallas' old nemesis, Amon G. Carter. He was determined to build Midway into the airport for the north Texas region, and it was renamed "Greater Fort Worth International Airport" to reflect Carter's determination. (Korth, p. 24.) Carter's plan had the blessing of the CAA which was willing to provide \$340,000 in federal matching funds for general improvement of the site. (Korth, p. 26.)

It did not take the Dallas leadership long to react. On November 14, 1947, the Dallas City Council issued a statement that they intended to "keep Love Field the Southwest's best airport...." For former mayor Woodall Rodgers it seemed to be the ghost of his battle fought five years before. The basic issues from earlier days were renewed and, for the first time, Dallas' Love Field was facing real competition. The CAA's 1948 National Airport Plan added fuel to the fire when they proposed to upgrade the Greater Fort Worth International Airport to a Class 6 airport--(6,500-foot to 7,500-foot runways)--and that it be developed into the major Fort Worth/Dallas Airport, while Love and Meacham Fields would be used as feeder and auxiliary fields. Dallas took its fight to Congress and the courts. In Congress, Representative Frank Wilson of Dallas was at first successful in blocking 2.6 million dollars allocated under the National Airport Plan for Greater Fort Worth International Airport. But it was a short-lived victory for Dallas. The Senate and a joint committee of Congress approved the complete package, and on May 29, 1948, President Truman signed it into law. (Korth, pp. 33-34.)

Even before their defeat in Congress, the Dallas leadership had decided to work through the CAA to stop the development of the Greater Fort Worth International Airport. Dallas' efforts proved unsuccessful, and on July 3, 1948, the CAA announced its formal approval for the construction to begin on the Fort Worth "regional" airport plan.³

Dallas, having been thwarted in its efforts, adopted yet another strategy. On September 15, 1948, the city of Dallas filed a petition in the U. S. Court of Appeals for review of all CAA proceedings. On February 1, 1949, the Fifth Circuit Court of Appeals formally dismissed the case. The City appealed the case to the Supreme Court, but the Court elected not to review the case.

Now that Dallas had been defeated in the Congress and the courts, the leadership of Fort Worth moved ahead swiftly. They secured supporting and matching funds from the CAA and proceeded to expand and remodel the airport. In an eight-month period from August 1948 to April 1949 Fort Worth received 1.4 million dollars in federal subsidies to develop

³Dallas also appealed, over the CAA head, to the Department of Commerce for a hearing and was turned down on September 11, 1948.

Greater Fort Worth International Airport. During the same period, the city of Dallas was in federal disfavor and temporarily immobilized,⁴ and was receiving minimal support from the CAA. In May 1950, however, the Dallas City Council, with strategy exhausted, voted to spend \$1,302,299 on Love Field improvements "in an effort to prevent heavy losses of airline business to Love Field."⁵

Between 1951 and 1953, periodic attempts were made to revive a joint airport for the two cities. (Korth, pp. 47-61.) As in the past, strong personalities, suspicions, and competitive pride in each community led to a breakdown in negotiations.

In July 1951, the city of Dallas hired James Buckley, Terminal and Transportation Consultants from New York to study the potential of Love Field. After a year's work, Buckley reported that the Dallas/Fort Worth area needed both Love Field and the new Fort Worth regional airport.

⁴ Early in 1949, the CAA withdrew a \$144,000 appropriation allocated to extend the runway at Love Field.

⁵ Dallas Morning News, 7 May 1950. Interestingly, in 1948, the city of Dallas seriously considered converting Love Field to industrial use if the city lost its battle to stop major airlines from moving to Midway Airport. (Dallas Morning News, 12 Sept. 1948.)

More significantly, Buckley reported that because of the population distribution, Dallas could demand a minimum of 62 per cent of the flights in the area.⁶ He further recommended that Dallas spend 17 million dollars on Love Field during the next decade (1953 to 1963) in order to satisfy a rapidly increasing demand. Armed with such a favorable report the Dallas leadership was not particularly interested in cooperating in a joint-effort, regional airport. In fact, five months after receiving the Buckley report, the City Council of Dallas, supported by the Dallas Chamber of Commerce, called for a 20 million dollar bond election in order to provide funds for expanding and remodeling Love Field. The bond issue was overwhelmingly approved on January 27, 1953, thus clearing the way for Dallas to expand its airport without federal aid.

After nearly fifteen years of political skirmishing regarding a regional airport, the Fort Worth City Council considered the issue irresolvable and on February 26, 1953, formally named its airport "The Greater Fort Worth International Airport, Amon G. Carter Field". It became operational on April 25, 1953.

⁶ This means that 62 per cent of the people were more conveniently served by Love Field than by the Fort Worth airport. Today approximately 75 per cent of all people that use the Dallas/Fort Worth Airport are from Dallas. (Korth, p. 49.)

Carter Field vs Love Field

For a time, the new Fort Worth airport prospered. However, the only airline that offered substantial service to Fort Worth was American Airlines. At this time, 26 flights per day originated from Carter Field as against 34 from Love Field. It soon was evident to the airlines that Love Field serviced considerably more than half the travelers utilizing the area's airport facilities. Moreover, the feeder lines had not shifted enough flights to Carter Field to justify the longer trips, especially those of American Airlines⁷ originating from the Fort Worth airport.

Only two and a half years after Carter Field opened the Fort Worth leadership had become concerned about the decline of service at its airport. The increase in passenger traffic at Love Field for the fiscal year 1955 was almost equal to the total number of enplaning passengers

⁷ American was the only airline that substantially improved its service at Carter Field. Braniff had planned to, but did not. One possible reason would be that Braniff hoped to "get the Jump" on American Airlines by staying in Dallas. It was originally thought that Braniff was going to move its headquarters to Fort Worth from Tulsa. Dallas made the airlines a better deal, however, and Braniff Airlines moved to Dallas instead.

at Fort Worth's Carter Field. That year Love Field enplaned 781,420 passengers, a gain of 165,522 over the previous year, as compared to only 165,632 total passengers for Carter Field for the same period, an approximate ratio of 6 to 1 enplaning passengers favoring Love Field. (Reported in the Dallas Morning News, 9 Dec. 1955.)

Between 1953 and 1956 several hearings regarding air service were held by the CAB, and because of rapid growth at Love Field the various appeals and decisions began to favor Love Field.⁸ At one point in these hearings Chan Gurney, Chairman of the CAB, suggested that Fort Worth sell, at the original cost, half of Carter Field to Dallas and that the airport's name be changed to Dallas-Fort Worth Airport or another neutral name. The Fort Worth city leaders, with the concurrence of Amon Carter, supported this proposal and suggested changing the airport's name to the Dallas-Fort Worth International Airport, Carter Field. By this time

⁸ The decision in the "Central Airlines" case initially favored Carter Field, but finally Dallas was able to persuade the CAB to allow some flights from Love Field. Also, the "Northeast-Southwest" case ruling favored Love Field over Carter Field. In this case, CAB examiner William J. Madden accused American Airlines of discriminating against Dallas.

(1955), however, it was obvious to the Dallas leadership that Carter Field was in financial trouble. Moreover, the City of Dallas now had too much invested in Love Field to abandon it, and it was evident that Love Field's share of the passengers and flights was growing in the competition between the two airports. It is not surprising, then, that the City of Dallas rejected Fort Worth's offer, thus ending the last real effort to reconcile the divisions that had developed between Dallas and Fort Worth leaders over the cities' respective airports.

At this point a brief recapitulation is in order. First, strong personalities from both communities tended to interfere with attempted compromise and reconciliation over airport development. Second, Fort Worth was simply not the calibre of financial and industrial community that generated great air travel. Third, although Carter Field may have been an ideal midpoint location for a joint regional airport between the two cities, its viability was jeopardized when the City of Dallas decided to expand Love Field, and naturally a regional airport must have the support of Dallas and its suburban communities. Fourth, no strong, sustained leader-

ship for the regional airport concept was forthcoming from the CAA or its successor, the FAA. Rather, the guidance from the federal agencies was episodic and vacillating. If the CAA had made a definitive "either/or" decision on a regional airport in the early stages of the controversy, a great deal of money could have been saved and much inconvenience avoided. Fifth, a reconciliation between the two cities regarding a regional airport would require a site nearly mid-point between them. In fact, at no time were other sites seriously considered for a jointly sponsored airport.

Between 1955 and mid-1965, when negotiators for the two cities signed a memorandum agreeing in principle to a regional airport serving the metroplex, Fort Worth had repeatedly initiated legal action against various airlines for inadequacy of service. Evidence presented at these hearings indicated that Fort Worth and Carter Field were not generating enough passengers to support the desired level of service. The CAB, on the other hand, was more concerned about the type and number of flights that should originate from Dallas' Love Field. A reservation-card survey conducted by the air carriers from December 3 to 6,

1962, showed that more than 80 per cent of the 22,101 area passengers originated at points closer to Love Field than to Greater Southwest International Airport. For flights of less than 250 Miles, the figure increased to nearly 84 per cent.⁹ The CAB supported Love Field as the most convenient airport for Dallas passengers.¹⁰

Although Love Field was the more convenient airport, it was also evident that Love Field's capacity for further expansion to fulfill the air transportation needs of the Dallas-Fort Worth area in 1980 was limited.¹¹

In 1962 FAA Administrator Najeeb E. Halaby appeared before a Congressional Appropriations Subcommittee and, re-

⁹ Dallas-Fort Worth Regional Airport Investigation, Docket 13959, Civil Aeronautics Board, April 7, 1964, pp. 7-8. In 1961 Fort Worth was successful in having the FAA approve a grant for 1.6 million dollars to extend the north/south runway at Greater Southwest across Highway 183.

¹⁰ Ibid., pp. 8-9.

¹¹ For details regarding airport expansion requests in the Dallas-Fort Worth area, see pp. 12-21 in CAB Hearings #13959. There was some speculation that the City of Dallas was considering an airport site to the east of the city when and if Love Field became saturated.

ferring to the Dallas/Fort Worth airport controversy, indicated that his Agency "refused to put another nickel... into duplicate facilities twelve miles apart." Following Halaby's lead, CAB examiner Ross I. Newmann began another series of hearings in an attempt to determine which of the two existing airports could best serve both cities. Newmann decided in April, 1965, that:

It would not be in the public interest to designate at this time either GSIA or Love Field as a regional airport to serve the Dallas-Fort Worth area.¹²

A few months later, in September 1965, the full CAB met and ordered the cities to agree within 180 days on the location for a new airport that would serve both cities. The CAB further implied that if the Dallas-Fort Worth leadership could not agree, then the CAB would decide for them. This resolute CAB position engendered a new spirit of civic leadership, harmony, and cooperation between the two communities. For the first time in this long controversy the cities were able to reach agreement and on June 1, 1965, the CAB announced:

Both cities have agreed to obtain the services of a completely independent airport planning consultant, an engineer of national stature who will recommend, after study to be done expeditiously (within 60 days if possible), the precise site, size, and configuration of a regional airport, such site to be located between Dallas and Fort Worth and limited only by Dallas and Tarrant Counties, North and South. The cost of the study will be borne jointly by the two cities.

¹² CAB Hearings #13959, p. 50.

Dallas and Fort Worth have agreed to establish an interim organization with power to take initial steps to insure the expeditious planning, financing, and construction of the regional airport, the construction to be completed and operational by 1971 but in no event, later than 1973. (CAB Press Release, 1 June 1965.)

In 1968, a permanent board--seven members from Dallas and four from Fort Worth--was appointed by the respective city councils to build and operate the new regional airport.

(See Appendix, p.11, for a more complete description of the Airport Board.)

This brief historical review points to the fact that for a quarter of a century (1940-1965) both cities' positions remained basically unchanged. As the airline industry grew and became increasingly important to both cities, the stakes for each multiplied geometrically. Yet essentially the same arguments were used over and over again, each city defending the view that its airport should be the one developed. It took the concerted, though certainly belated, efforts of the CAB-FAA to bring the factious parties together in this joint venture.

The Plan Disassembled

In addition to the foregoing historical constraints embedded in the early D/FW plan, a further assumption is important. The airport design began with a concept of the maximum utilization of approach and departure corridors in the mid-cities region. A joint effort carried out by Alan M. Vorhees and Associates, Inc., Transportation and Planning Consultants of McLean, Virginia, and the Federal Aviation Administration was undertaken to construct a dynamic model of the total airport facility.¹³ And, of course, the information generated by this model is no more reliable than the assumptions upon which it is based. The model simulated the airport under conditions of total airspace saturation. The subsequent criteria generated by the model helped to mold the size and the shape of every aspect of the final structure. There is also evidence to suggest that this idea of maximum airspace capacity was not solely responsible for the very large edifice that is the Dallas/Fort Worth Regional

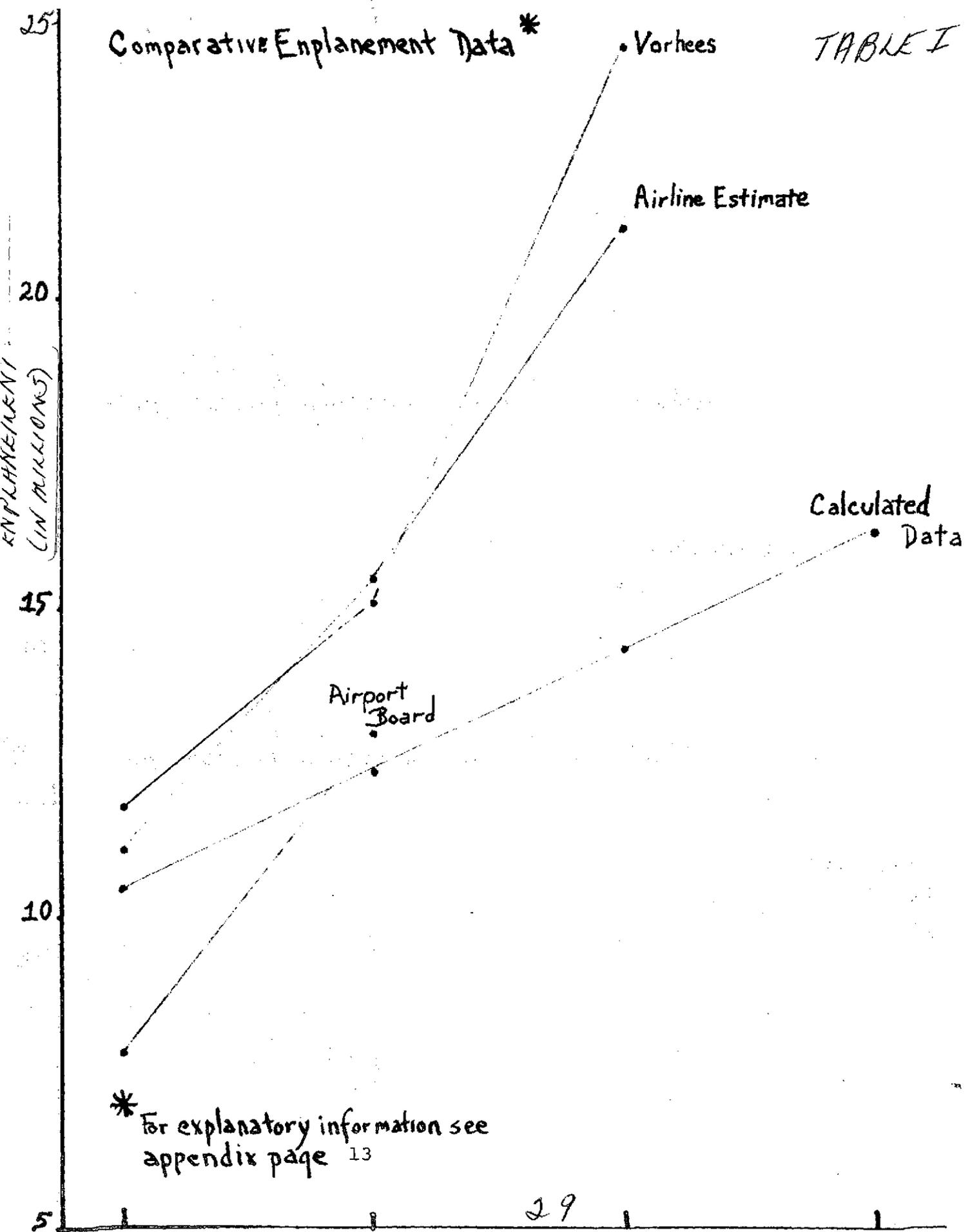
¹³ We have been unable to obtain sufficiently specific information regarding this FAA-funded airspace simulation to determine the assumptions of the model regarding air traffic control and aircraft technologies. For example, 6,000 feet between parallel runways to provide for simultaneous approach and departure in IFR conditions, as well as parallel approaches and departures in IFR conditions, resulted from this maximum concept.

Airport. Nevertheless, the maximum capacity premise was reinforced by widespread confidence that the growth curve for the airline industry, in terms of passenger use, passenger miles, and cargo, as well as size and speed of aircraft, would continue at relatively the same rate as it had during the previous ten years.

From Table I, it is obvious that the projections calculated by Vorhees, the airlines, and the Airport Board are "off the mark" according to our data. More precisely, the calculated date (determined from actual data at Dallas Love Field and Greater Southwest International Airport) indicate for 1975 10.5 million enplanements as compared to the Vorhees study of nearly 12 million and the Airport Board study of nearly 8 million. This is a 50 per cent spread of nearly 4 million enplanements. By 1980, all three studies' projected enplanement levels surpass the calculated data. The consultant's slopes are so steep that by 1985 all predicted levels exceed that of the calculated data by more than 30 per cent. Even greater variance is portrayed in Table II. In the projections of cargo, our extended data for 1975 indicate only 87 thousand tons--the other predictions were at least 25 per cent greater. Again, if one extends the curves, the consultant's predictions appear to have been unrealistically optimistic. These are clear examples of faulty planning assumptions.

Comparative Enplanement Data *

TABLE I



* For explanatory information see appendix page 13

Table II

Comparative Cargo Data *

Airport
Master
Plan

↑ 600,000 - 1980

↑ 670,200 - 1990

Texas
Transportation
Institute

405,000

305,000

205,000

105,000

65,000

TONS
OF
CARGO

Fact
Sheet

Extended
Data

1970

1975

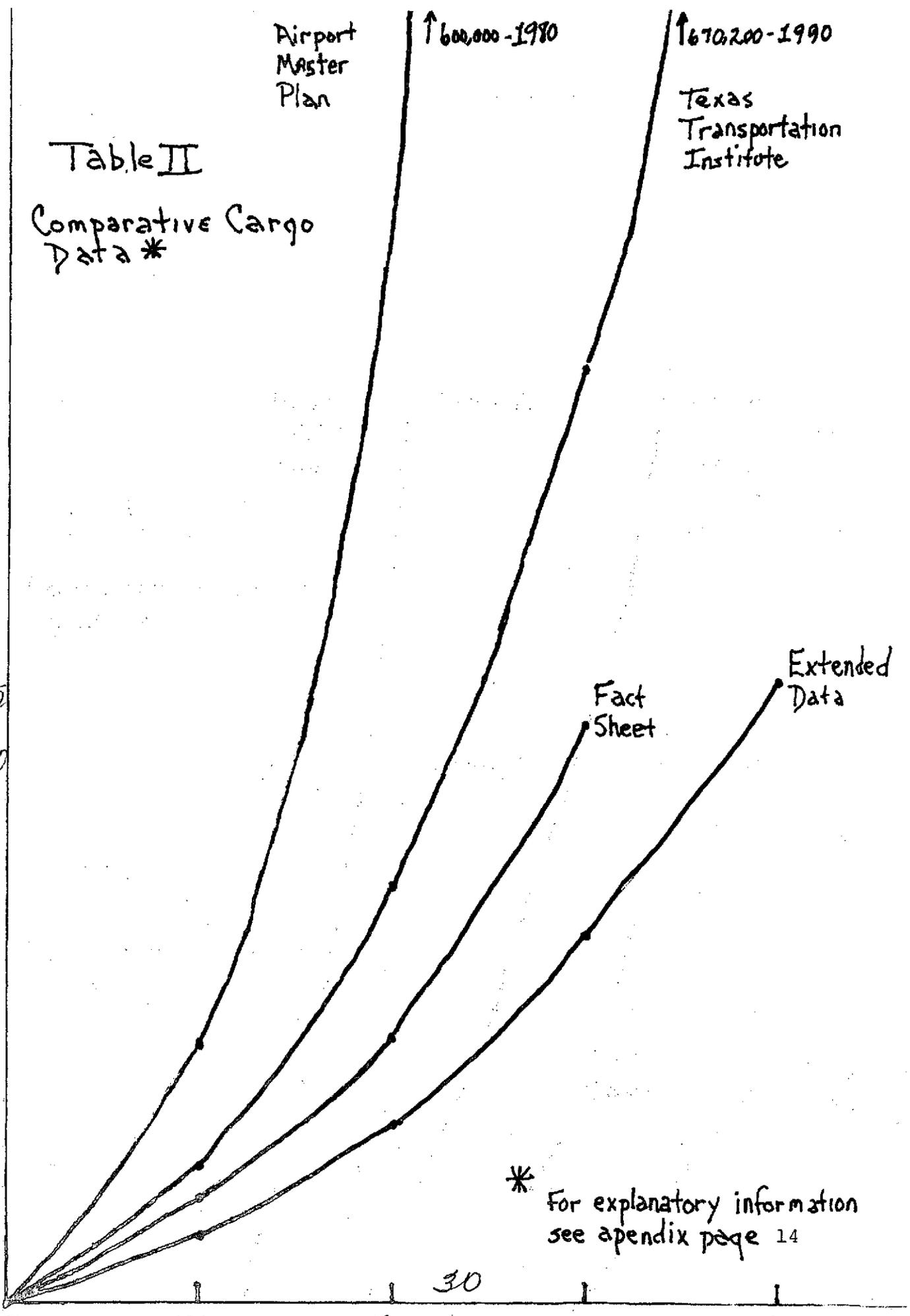
1980

1985

1990

30

* For explanatory information
see appendix page 14



It is clear from the foregoing comparisons and from our information about the airline industry more generally that growth of passenger and cargo traffic will be less rapid than the projections suggest. The jumbo jets have not been as widely used as predicted; the SST has not materialized; long-term fuel limitations were not considered; and the small, short-to-mid-range jet has a much larger share of the market than had been anticipated ten years ago.¹⁴

Many of the social and political problems the airport has confronted since it opened seem to have resulted, at least in part, from commitment to unreliable assumptions.

It is clear that much weight was given to basic assumptions in planning the size and capacity of the airport. Assumptions are a valid part of planning decisions; however, it must be recognized that they (e.g. national economic growth, passenger usage, growth of air cargo, number of persons using parking facilities) are often unreliable.

¹⁴ A report dated 2 Jan. 1974 in the Dallas Morning News claimed that American Airlines had grounded 10 of its 16 B-747's. TWA also had mothballed several B-747's and taken 12 Convair 880's out of service. This action was in response to the "fuel crisis" and a generally dampened economy. As far as we know, neither these airlines nor any others are operating as many jumbo jets as they had planned.

It is often argued that the consultants frequently act simply to validate or confirm the assumptions and ambitions of their clients rather than to perform independent analysis.¹⁵ In the case of the Dallas/Fort Worth Airport, however, one can see in the data just presented that several different consulting groups were asked to provide projections. Furthermore, one can note that there is wide variation regarding initial levels in the consultants' predictions regarding future growth of the Dallas/Fort Worth Airport. But notice that the slopes are optimistic, to say the least. Though different levels simply project a constant error, different slopes magnify errors through time.

The consultants appear to have been employed in the Dallas-Fort Worth project responsibly. We can still see, however, that even the most conservative projection quickly surpasses the rather optimistic calculated data projection. It may be that the basic assumptions in the plan, particularly those regarding the future of supersonic air transport and super jumbo jets, have ceased to be viable alternatives

¹⁵ An interviewee whose work was directly related to the planning of the airport expressed and confirmed this notion.

for the present because we have come to the end of an era in American air-transport development. As an indication of a changing point of view, we noted that the Congress now withholds federal funds from any airport project unless sponsors can prove that the facility will cause no environmental damage or that no alternative site is available.¹⁶

In other words, locating airports primarily to assuage political differences or to maximize public accessibility may no longer be as important, at least in the view of the Congress, as safety and reducing possible impairment to the physical and social environment. Clearly, this suggests that if the D/FW planners had been subject to these criteria, the location, or the design, and the scale of the airport might have been different.

The Final Environmental Impact Statement for the Dallas-Fort Worth Airport project, submitted in May, 1972, by the firm of Tippetts, Abbett, McCarthy, and Stratton (TAMS), was short and cursory. Essentially, it argued that the projected site for the Dallas-Fort Worth Airport was not

¹⁶ Jerome E. Milch, "Feasible and Prudent Alternatives: Airport Development in the Age of Protest." Paper prepared for delivery at the 1974 APSA Meeting, p. 10.

in an "important" physical, natural, or social setting, and that there was very little worthwhile that could be upset in this particular area.¹⁷

The United States Department of the Interior, responding to the TAMS Environmental Impact Statement, argued that "the statement's conclusions regarding Bear Creek flood discharge are misleading." [Environmental Impact Statement (EIS), p. A-1.] The Interior Department's response to the impact statement goes on to say that the Environmental Impact Statement addresses itself almost exclusively to the project's economic impact and that equally intensive consideration ought to be accorded the project's long-term effects on the environment (EIS, p. A-2).

The Environmental Protection Agency, responding to the TAMS impact statement, claimed that it "does not fully address itself to what happens to the environment without the project." (EIS, p. A-6.) The EPA states that noise levels are listed in decibels in the TAMS statement and that there is no indication as to how the levels were

¹⁷ TAMS is a New York based firm of consulting engineers who were given overall responsibility for coordinating all aspects of the D/FW project.

measured. In addition, there is no description of what the Environmental Impact Statement means when it refers to noise level projections. (EIS, p. A-6.) Finally, the EPA response notes that the noise exposure forecast includes a monastery, two churches, two schools, and a university in an area of high exposure. Hence, "there is a serious question whether the noise levels at these institutions will be acceptable, especially when it is clearly stated in the impact statement that such construction and activities should be avoided within this noise exposure zone where possible." (EIS, p. A-7.) These examples would suggest that environmental criteria were not foremost, or even particularly important, in the planning and designing criteria that resulted in the Dallas/Fort Worth Airport.

We do not mean to suggest that the Dallas/Fort Worth Airport is by any means a disastrous project, a monstrous failure, or even a badly designed airport. There are certainly difficulties associated with the airport, especially political problems arising from its location and design. We will develop the argument later in the paper

that the social and political problems of the airport board and the airport management are far from over. In our opinion, however, it is equally foolish to argue that a technology the size or scale of D/FW Airport can be undertaken, that is to say planned, so as to avoid or even foresee all technical, social and political difficulties.

Regardless of how rigorous and explicit one's methodology, it is evident that policy makers' assessments and projections all too often will be wide of the mark because:

- (1) Assessments concern future states of affairs for which, by definition, there can be no data. There is no reason ever to expect a forecast to be "correct enough." How, for example, does one plan for future values?
- (2) Assessments must assert the likelihood of particular chains of consequences or events. Yet present understanding of social causality is minimal.
- (3) Assessments require that the data to be gathered be specified; the researcher must make value-laden choices about the relative significance and insignificance of the data he will collect. Data Collection is never a truly "objective process."
- (4) Assessments must eventually enable the making of choices; therefore, benefits must be measured. But no widely accepted mechanism exists for the measurement and comparison of social costs and benefits.

- (5) Assessments must have arbitrarily defined scopes; not all consequences can be considered. Analysts have little means of guaranteeing that they have correctly defined the problem.¹⁸

But Jack Downey, Deputy Executive Director of the D/FW Airport Board, writes that long-range plans must anticipate problems of the future to assure effective design and continued operating efficiency. (ICAO Bulletin, date missing, pp. 8-12.) In some ways the D/FW Airport design represents a serious attempt to discount the future in the planning/designing process. The airport has a great deal of flexibility designed into it, but it is a one-sided flexibility. In other words, the airport can only grow, and really only grow in certain ways. The idea of adaptability in the D/FW plan does not include reversability. The plans did not, and perhaps could not, anticipate unexpected or unplanned developments in aviation.

¹⁸ Todd R. LaPorte, Social Change, Public Response and Regulation of Large-Scale Technology, December, 1972, Institute of Governmental Studies, University of California, Berkeley, California.

Surprising and Costly Consequences
of Passive Capacity and Technology

The flexible aspect of the airport's design is an important step in the right direction, but it stopped rather short of the mark.

D/FW represents an attempt to plan comprehensively. Explanations about ground transportation, feeder highway networks, fuel, electricity, cooling, and many other support services (from food to approach control), as well as present and future aircraft design, were considered in the planning process, and the result can be seen in the Dallas/Fort Worth Airport today. But comprehensive expectations about the future are likely to result in multiplier or reinforcing error, which in turn yields unrealistic performance expectations and surprising consequences. For example, fewer jumbo jets are using the airport than had been expected; more people are transferring between terminals than had been expected; fewer people are using automobiles to go to the airport than had been expected; and more people are riding the bus or limousine service, Surtran, than had been expected.

On the one hand, the predictions regarding use of the facilities at D/FW appear to be unrealistic. On the other hand, mistaken assumptions about the future of commercial aviation in American society further compounded the error. The resultant design seems to be, in many ways, inappropriate to present needs. D/FW, then, is caught in a conflict between the level and type of use required to satisfy the imperatives of its design and the actual use it is experiencing.

Though the present facility is less than one-half its planned size, as specified in the master plan, it is already clear that D/FW is overbuilt. It has a large passive or excess capacity. Considerably less than expected revenues, together with airline requests to defer payment to Dallas and Fort Worth for the initial study, indicate that the projections based on growth patterns of the 1950's and 1960's were too optimistic. A news article reports that the Dallas/Fort Worth Airport landing fee rate, already among the highest in the nation, was increased more than 18 per cent to compensate for nationwide airline cutbacks. (Dallas Morning News, 11 Jan. 1974.) Furthermore, because of the airlines' trend to fly smaller and lighter aircraft, the decrease in landing weights would result in a 1.26 million dollar loss in revenue from landing fees.

Similarly, a long and continuing controversy regarding commuter flights flown from Dallas' Love Field developed. The cities' leaderships--especially that of Fort Worth--feared that commuter flights would lead to revenue losses at D/FW; which in turn, could lead to deficits which would downgrade the classification of the bonds Dallas and Fort Worth guaranteed in order to build the regional airport. Altogether, nearly 600 million dollars in bonds were sold to finance the Dallas/Fort Worth Airport. City officials agreed that the airport bonds were likely to be downgraded if there was a default in payment or continuing litigation involving the Dallas/Fort Worth Airport. At the moment, both appear likely. (Dallas Morning News, February 6, 1975).

Conflicts concerning D/FW financing, and particularly Love Field's impact on D/FW revenues, offer clear indication that the ancient controversy between the cities of Dallas and Fort Worth is far from over. The Dallas Morning News reported that a suit to close Love Field, brought by the City of Fort Worth, is a real possibility and could touch off open warfare between the two cities. (Dallas Morning News, 11 Jan. 1974.) In fact, there were indications some time ago that "economic projections made several years ago for the Dallas/Fort Worth Airport's first operational

years appear to be inflated, sending airport financial experts to the drawing boards to escape an operating deficit next year." (Dallas Morning News, 8 Apr. 1973.) The article continues that "the airlines are committed to making up any expected deficit through an increase in landing fees and sources say there is a limit to how much the airlines can absorb." This, then, portends an operating deficit in that the airlines quickly requested increased landing fees. This past August, spokesmen for eight major airlines asked the cities of Dallas and Fort Worth to cancel a \$2,435,270 debt which the airlines owe under a regional airport contract. The cities responded that they would need more tax money to compensate for such a loss of anticipated revenue and, thus, the councils in both cities voted to deny the request. The spokesmen for the airlines argued that revenues from parking at D/FW had been less than anticipated and problems with the Airtrans system¹⁹ had added to overall operating costs. They went on to warn that other financial help might be needed if the revenue picture at D/FW did not improve.

¹⁹ This is the people mover system built by Ling-Temco-Vought (LTV), a Dallas based corporation. Airtrans system is a rubbertired, electrically-powered, multi-purpose transport system constructed to move along concrete guideways. The system is intended to be fully automated and can reach a maximum speed of 17 miles per hour along independent guideways. (See Appendix, pp. 5-9.)

Interestingly the Texas Association for Public Transportation Newsletter, Vol. 1, No. 3, July, 1974) reports that Surtran, the limousine service for D/FW, is carrying an average of 3700-3800 riders per day. This is 32 per cent greater than the 2850 per day projected. The public transportation publication goes on to say that airport planners did not anticipate such an increased reliance on public transit, so their predictions for D/FW automobile parking revenues were overestimated by some \$15,000 per day. Finally, a photo in the Dallas Times Herald showed that most of the 20 American-Eastern terminal gates were occupied while only about one-third of the close-in parking lot was full of cars. (Dallas Times Herald, 13 Oct. 1974.)

Airport officials indicate that the imbalance in revenues results also from the greater than expected number of passenger transfers; D/FW is the third largest transfer point in the nation. In fact, the largest structure on the median strip between the north-south access highway is a several-story, completely unused, building intended for valet parking. After this parking edifice had been constructed airport administrators discovered it would cost about \$6.50 per day to park in the building on a valet basis and they concluded

that at this price there was no demand for valet parking at D/FW. Thus, this large, expensive structure is not open or used for any purpose. ²⁰

The airport manager reported in an interview that they had expected approximately 50 per cent of the enplaning passengers at D/FW to be transfers, while the actual figure is about 60 per cent. Less than expected parking revenue is not the only difficulty exacerbated by this unexpected development.

First, the transfer ratio which is higher than anticipated is placing a heavy demand on Airtrans, the terminal-to-terminal people mover. Paradoxically, Airtrans may be a manifestation of overbuilding that is inadequate for the demand.²¹ That is, Airtrans is a very costly, independent ground transport system that has not to date been particularly reliable or efficient. In addition, the roadways to support an independent transportation network are in place. The faltering Airtrans system

²⁰ The valet parking structure is five-tier, concrete and steel, designed to store 1,795 automobiles. The cost of construction was 2.5 million dollars.

²¹ We will expand the description and analysis of Airtrans below. (See Appendix, pp. 6-9.)

requires that buses and trucks be utilized to transfer employees, baggage and the U.S. mail. In short, the airport supports two fully developed modes of internal transportation.

Similarly, the automated, computerized baggage system installed by the major airlines at D/FW cost several million dollars. This "Telecar Baggage System" has not proved a satisfactory system. Bags have been lost or routed to the wrong terminal, thereby further complicating interline transfers for people passing through D/FW. Recently, Braniff and American Airlines spent approximately two million dollars each to modify or partially replace this expensive baggage system with more conventional, rather simpler, hand-loaded conveyor mechanisms. Thus, it seems that the airlines, even though they are financially strained at D/FW, are spending several million additional (unplanned) dollars to improve the baggage transfer system.

We are in a period of unprecedented inflation in modern America. Economic exacerbation further strains the financial system of D/FW in that one finds unavoidably increased costs at the same time that real revenues are decreasing because of inflation.

There is yet other evidence that D/FW is overbuilt. We observed that the airport is using approximately one-sixth of its cooling capacity. The plant technicians reported that the airport's needs are readily met by one of the airport's three coolers.²² The chief project engineer admitted in an interview that a centralized utility complex that was not used to capacity was, in the short term, expensive and inefficient.

Also, the manager of the airport's food preparation and distribution facility argued that the new food preparation building was far too big and that production was impeded because his employees had to cover great distances to get supplies and prepare food.

Such passive capacity means that the cost of future expansion will be lessened if it is needed. Both passive technologies and capacities are difficult to support in the near term, and the revenue deficit at D/FW is a good example. This does not mean that the revenue deficit is due only to overbuilding or overdesigning. Excess capacity adds further

²² Space for another large cooler has been provided in the utilities building. This would enable a 25 per cent increase in overall capacity. In other words, three of four coolers have been installed and the report is that only one of the three, operating at 50-60 per cent capacity, is needed.

strain in a context of optimistic predictions and excessive inflation. In short, excess capacities and technologies are unlikely to pay for themselves in the early stages, and the airlines are going to the primary sources of their support, Dallas and Fort Worth, to make up the deficit. As a result, a difficult, perhaps explosive, political situation may be developing between revenue-hungry local governments and a revenue-hungry airport board--each looking to the other for fiscal relief. A local paper quotes the Tarrant County Tax Assessor and Collector saying that he was "ready to go to court to collect taxes on the hotel at Dallas/Fort Worth Airport." (Dallas Morning News, 6 Apr. 1974.) The management of the hotel reportedly informed the assessor-collector that they would pay tax on furnishings and other personal property, but they would not pay an assessment on their building. Later it was reported that Tarrant County Assessor-Collector Reed Stewart expected "a court battle to determine how far governmental units may go in taxing Airlines." (Dallas Morning News, 30 Aug. 1974.)

The Imperatives to Excess Capacity

On the one hand, airport management and the airlines are looking to local governments for debt relief, while at the same time other local governments are actively exploring the revenue potential of the new airport. This is an especially difficult problem because 85 per cent of the D/FW patronage comes from Dallas' suburbs. Strangely enough, it was these Dallas' suburbs who voted against the referendum to approve the bond issue enabling the D/FW project. Tarrant County and its major city, Fort Worth, supported the bond issue in the first vote, but the land issue was not approved in the City or County of Dallas. The following year the wealthy and politically influential businessmen in Dallas conducted an expensive, high pressure campaign to get residents in the City of Dallas to approve the bonds. In the second vote then, the bonds were approved by the City of Dallas voters. Thus, airport bonds were eventually approved in Tarrant County, the City of Fort Worth, and the City of Dallas; the suburban Dallas County voters, however, declined to assume the indebtedness.²³ The airport project

²³ Some contend that the vote and the issues in these two bond campaigns indicate that the Dallas suburbanites voted against the Dallas political and business elite rather than against a big, expensive airport. In fact, for many of these suburbanites, D/FW is nearly as close as Love Field.

was salvaged at this initial stage only because Dallas' civic leaders decided that the airport must be built.

The question is, then, why were the civic leaders in Dallas so determined that a large scale airport be built? Was it simply that the Civil Aeronautics Board and the FAA told the Cities of Dallas and Fort Worth that they must join together and build a single regional airport? While we think this was a necessary condition, it was not sufficient. The citizens of Dallas, particularly the business and political leadership of the city, had ignored such federal directives before. Love Field was developed in reaction to a federal order. In fact, Fort Worth had far more to gain than did Dallas in supporting a regional airport. Therefore, several alternative hypotheses are possible specifying what led the Dallas leadership to favor the proposed D/FW project.

First, there are indications that Dallas' business and civic leaders believe that Dallas can become a world financial center. Since the D/FW project began, they have built the world's largest Trade Mart. They have tried to get voter approval for a major canal linking Dallas-Fort Worth to the Gulf of Mexico. Ironically, this proposal was defeated by the voters of Dallas County and, as yet, Dallas' civic leaders

have not been able to resurrect it.²⁴ In short, it appears that the Dallas/Fort Worth Airport was intended to serve a symbolic, as much as an instrumental, purpose.

Civic leaders seemed to be looking to the airport as a psychological and an economic multiplier, as well as a technology to facilitate air transport to and from the area.²⁵ The mass media clearly reflects this intention reporting that the impact of the new Dallas/Fort Worth Airport on the landlocked metroplex can only be calculated in billions of dollars. (See, for example, Dallas Times Herald, 17 Mar. 1974.) Such claims argue that the effects of D/FW will unwittingly touch every man, woman, and child in the metroplex. "The total direct and indirect impact of the airport in 1975 is estimated to be 637 million dollars spread into virtually every industry

²⁴ The rural counties along the proposed canal route generally supported the project, while Dallas and Tarrant County voters defeated the proposal. (Dallas Times Herald, 14 Mar. 1973, p. 1.)

²⁵ John Shaffer, FAA administrator, at ground breaking ceremonies for the control tower on 15 July 1971 said: "Transportation has played a key role in the building of the world's great cities. All roads led to Rome. London was built by the sailing ship. New York City gained status as a steamship port. Chicago grew by the railroads. No city has yet reached its greatness by aviation. The facility being built by Dallas and Fort Worth will fulfill this destiny."

sector and through these pipelines a significant percentage will, of course, end up as profits from local sales and in payrolls in every type of business." (Dallas Times Herald, 17 Mar. 1974.) In an article in Southern Living, then Executive Director of the Airport, Thomas Sullivan, who is given credit for being the driving energy and the vision behind the Dallas/Fort Worth Airport, was quoted as saying: "It is my philosophy that an airport is not an end in itself. I believe instead it is a means for a rational development of the entire economic area in which it is located." (Southern Living, Aug. 1973, p. 47.) It is clear, however, that Dallas and Fort Worth are not yet world trade centers. There are few foreign banks represented in the Dallas-Fort Worth area. Texas International Airlines and Braniff International Airlines do offer direct international flights from the Dallas/Fort Worth Airport, but only to Latin America.²⁶ Of the two cities, Dallas has been and continues to be the important regional financial center, but the Dallas-Fort Worth area has not yet achieved international status.

We have been unable to find evidence that a plan other than that displaying the basic characteristics of D/FW was

²⁶ Texas International has a very limited international route structure. Thus, Braniff is the only full-scale international airline presently operating from D/FW.

seriously considered by local politicians or planners, designers or engineers hired by the local civic and political leadership. It is true that the first Executive Director of the Airport, Thomas Sullivan, inherited an embryonic hub design which he quickly changed to the present linear or spinal structure, but this seems to be in keeping with our argument that it was assumed from the beginning that D/FW would be a very large, noteworthy airport. The Environmental Impact Statement, submitted by the TAMS consulting group, gives very short shrift to the question of alternatives. Quoting from page E of the Impact Statement:

Several alternatives to the present project were explored, including major expansion of Love Field, the existing aircarrier airport for the area; major expansion of Greater Southwest International Airport which is immediately south of the present site; major expansion of both of the above airports; a new site on the Dallas-Tarrant County line (south of the existing site); and the alternative of doing nothing.

This is all that is said in the consulting engineer's report regarding alternative considerations. We could not find evidence that these possibilities and others were seriously evaluated by the TAMS group, the political leadership, or the citizenry. In other words, there is no indication that the positive and negative attributes of alternative possibilities were carefully explored.

Such cursory treatment of alternatives further suggests that D/FW was to reflect and play an important symbolic and psychological role, as well as one of pure utility. We have noted that much of the literature publicizing and describing the new airport echoes concern for the airport's image more than for its function.

The Image and the Reality

Publicity for the D/FW project passed through three stages. First, during the early construction phases, the public relations effort was directed toward "public education." The thrust was to let people know what was occurring or how the project was progressing. Second, publicity was considerably expanded as the opening date approached. Several firms were hired to create an image of the new airport and to generate local, national, and international awareness of the airport as an integral part of the Dallas-Fort Worth economic and social setting. Third, a campaign to convince D/FW's patrons of its workability and desirability became necessary after the airport opened because of the many difficulties which were encountered.

Through the construction stages, airport administrators worked constantly to inform local citizens about D/FW. Airport representatives were always available to speak before groups. A telephone rotary was installed, and people were encouraged to call with questions or suggestions about D/FW. This first public relations effort was regarded as the most successful by the airport administration. Throughout this

"education" phase, D/FW was depicted as a symbol of future growth and strength in the Dallas-Fort Worth area.²⁷

The dedication ceremonies marked a turning point in D/FW's public image. Initially, the dedication and the opening of the airport were planned for the same day. The opening was delayed, however, because the airlines were having difficulties moving to the new facility. Thus, the dedication was held on Saturday, September 22, 1973, while the opening was delayed until January 13, 1974.

Months of preparation went into the dedication weekend activities. The dedication, like the airport, was planned with the assumption in mind that bigger is better. An extravagant cocktail party was held for the guests in the Delta terminal. The opening ceremonies introduced the world to the airport.

On the Friday prior to the Sunday dedication, a cocktail party and tour was held for the press. Saturday's papers were filled with complaints of missed tour buses, too few press kits, inadequate service, and distressing tales of disorganization throughout the airport. Saturday was no better; visitors complained bitterly about disorganization

²⁷ Examples of phase 1 advertising included pamphlets entitled "The Airport of the Future Today" and "The First of a New Breed of Giant Jetports."

and confusion. By Monday morning, the new airport had already made enemies and flight operations had not as yet commenced.

The local press quickly forgot the events of the dedication ceremonies, and three months later news of the opening filled the local papers. Although the cliches used to describe D/FW were numerous, they had one thing in common. If you knew nothing else about the airport, you knew it was big. The most often used phrase was: "an airport the size of Manhattan." (See Appendix, p. 10.) A variety of public relations techniques was used to illustrate the vast size of the airport. PR men dwelled at length on the size, newness, and innovativeness of the airport and apparently never checked into its practicality for an air traveler.

Because of this sustained build-up, everyone was expecting a truly super airport; they found instead problems that matched the size of the airport. Passengers complained of long waits and great confusion. This was perhaps to be expected, but numerous equipment malfunctions and increasing friction between traveler and airport surprised airport officials. For example, the automated baggage system had a propensity for shredding baggage rather than simply losing it. The Airtrans people mover experienced a variety of

difficulties that infuriated people who missed planes or found themselves stranded out on the track.

Moreover, the amount of change one had to carry to go through the airport engendered bad feelings and bad press. It cost a quarter to bring a car into the airport, a quarter to move from terminal-to-terminal on Airtrans, and a quarter to use the telephone. People complained of being "quartered to death."

Ironically, probably the single most talked about bad deal at the airport was the dollar changers that returned only 95 cents. The airport's Operations Director pointed out in an interview that these dollar changers were nothing new. He said that many airports throughout the country have similar machines. The nickel is kept as a service charge. For example, the dollar changer at the Dallas Greyhound Bus Terminal returns only 95 cents.

The new airport, which was expected to garner praise, gathered stinging criticism instead. The bad press was a severe blow. A Time magazine article reported for all to see that travelers and travel agents were doing anything they could to stay from D/FW. (Time, 24 June 1974, p. 56.) Many people appear to have developed negative attitudes

about the airport, and these have not been easy to combat.²⁸

The bad press has had an effect on the airport, but it is difficult to judge how much. The problems D/FW was having were mentioned at the Civil Aeronautics Board hearings in Phoenix this past summer (1974). The hearings were preliminary to awards of new international routes, and D/FW's reputation seems to have been weakening the airlines' requests. Braniff International Airlines, which had been clinging stubbornly to commuter flights from Love Field, moved completely to D/FW in exchange for CAB consideration of its request for new international routes.

²⁸ The following is a somewhat vituperative, though not uncommon, example of post-opening press for D/FW:

"The new Dallas/Fort Worth Airport doesn't have, among other things, a chapel, movies or television, public observation decks, valet or helicopter services, mailboxes, a drug prescription service, or a first class restaurant. It also doesn't have legions of undying admirers.

"The reason for the lack of unabashed, pennant waving fans is that the airport confused, frustrated, angered and delayed many a passenger during the opening days. There were traffic jams, baggage shredded on conveyor belts, interminable waiting periods for late flights and overpriced food, drink and services. What had been touted as the instant nirvana for the jet-age traveler turned out to be something a lot closer to a Busby Berkley number choreographed by a brain-damaged loon." ("Sunday Magazine," Dallas Times Herald, 17 Feb. 1974.)

The administration at D/FW is working to overcome its poor reputation. A film is being made about the airport for viewing by travel agents throughout the country. Moreover, progress is being made; baggage handling systems have been replaced, and Airtrans, though performing only part of its intended services, is transferring passengers more reliably.

What appeared to be a negative overreaction to the new airport and its start-up problems is understandable if characterized as an unanticipated consequence of shaping expectations more from symbolic than utilitarian values. The airport, and particularly the terminals, are smartly decorated and attractive to the eye. As one observer reported, they seem to be gold and platinum plated, but are not particularly comfortable--again, the concern for D/FW as a symbol rather than for the user. If one believes the publicity, it is most important that an airport be attractive, big, and important. The airport is apparently to typify Dallas/Fort Worth as an attractive, vibrant center for financial interests rather than to provide convenience, comfort, and transportation for people.

One could argue that the fundamental purpose for that cluster of technologies called an airport is to enable con-

venient, timely, effortless transition from ground to air and from air to ground. An airport is a pass-through, a means to facilitate a change of transportation mode. Yet, if one is to believe Executive Director Thomas Sullivan, quoted above, an airport is not a means to facilitate change of transportation modes so much as a rational means to develop the economy of a region.

The symbolic or psychological concerns reflected in the design of the Dallas/Fort Worth Airport suggest as well that it was planned and constructed more as an end-in-itself than as a means to an end. We noted, for example, that the physical design of the airport does not really facilitate airline to airline transfer of people requiring connecting flights. The airport's Operation Director stated in an interview that persons arriving for transfer to another airline needed nearly an hour to assure successful change. He indicated that this was a very difficult problem and that they were having a hard time alleviating it.

The most noticeable villain in this particular drama is the ailing Airtrans people mover system built by Ling-Temco-Vought (LTV), a Dallas-based corporation. Airtrans added 35 million dollars to the construction cost at D/FW.

It was designed to carry patrons, employees, baggage, mail, supplies, and trash. Presently, Airtrans carries only passengers, some baggage, and occasional trash. Employees, as we said, use the bus system; most baggage is transferred by truck; supplies and food are transported to and from the flight kitchens by truck; and recently the Post Office announced that it would not transfer mail on Airtrans until it is more reliable. In short, only two of six functions are presently operable.

Furthermore, an American Airlines official reported that American is inaugurating its own bus service for connecting passengers transferring from certain other flights. (Dallas Times Herald, 8 Sept. 1974.) American's management stated that missed connections result in poor customer relations. Texas International already has mini-buses operating from its terminal to assure passengers with close connections of catching their flights on other airlines. Delta Airlines uses station wagons for the same purpose.

During an airport operations committee meeting, the four car rental agencies serving D/FW from desks in the north and south remote parking lots, received approval to

detail plans for carrying customers between the lots and terminals to mini-buses or station wagons.²⁹

It is somewhat surprising that Airtrans has been the source of so many problems. First, it reportedly was built largely from off-the-shelf items, and little in the design was new. Second, it is intended to be an automatic system; technicians on duty at the Airtrans Control Central reported that it was designed so that only two employees were needed for monitor and control. At present, Airtrans Control Center is manned by four airport board employees and six or more LTV engineers.

It was also reported that an additional 2 or 3 million dollars have been spent since the airport opened to improve Airtrans operations. The passenger loading stations are nearly always manned by attendants, and, quite often, attendants will be riding in most cars on the guideway. Of course, the design calls for no such attendants, either in stations or in individual cars. Our observations of the Airtrans systems suggest that, like all relatively complicated man-machine systems, it is most vulnerable under stress. The system appears to work smoothly and

²⁹ See Appendix, p. 12, for a discussion of Airtrans, and in particular, the contract-letting procedure through which LTV received the contract to build it.

without difficulty most of the time. However, during those periods of the morning and evening when demand is heaviest, we have noticed that the system is most likely to create passenger delays. Naturally, this does lead to bad publicity and bad feelings about the Airtrans system in particular and D/FW in general.

In sum, we find that D/FW presents an over-large, over-elegant edifice that promises more than it delivers. The gap between promise and performance has clearly resulted in a nationwide flurry of very unfavorable publicity for the Dallas/Fort Worth Airport. Major articles in such widely distributed periodicals as Time and Newsweek have presented an adverse image of the airport, as have negative references on television's popular "Tonight Show." Furthermore, administrators at the airport confess they are taking positive, and rather far reaching, steps to neutralize such adverse publicity. Despite the Operations Director's admission that the airport is spending a good deal of money trying to re-educate the press and travel agents around the country, the adverse publicity continues. In the past two months, however, there have been fewer airport related items in the local press and on local news stations. And good

news as a ratio of the total news concerning D/FW has improved noticeably. Locally, at least, the bad news seems to be evaporating.

Yet, there is little evidence that the problems we have outlined are resolved. Recently, an evening news broadcast on a local television station reported that D/FW lost 2 million dollars in its first six months of operation. That would seem to be an important story, but this news item was not repeated or reported elsewhere. At that time, the Airport Board members left a meeting brushing aside questions with a quick "no comment" on a matter which eventually may cost taxpayers millions of dollars if airport revenues fail to meet bond payments. (See especially Dallas Morning News, 10 Aug. 1974.) Another time, Board members met in what was announced as an emergency session to consider the legal implications of Airtrans' inability to function properly for even one day since the airport opened. Again, Board members avoided comment, claiming they were bound by legal considerations. It seems that in the last six months a "no press is better than a bad press" attitude has developed. But perhaps the result will be to direct attention toward the function and away from the symbol.

Technology: Physical Entity or Complex
Socio-Mechanical Organization

Perhaps the most promising way to characterize the planning and design processes that resulted in D/FW is one of conceptions of technology. The evidence is overwhelming that those associated with the plan, design, and construction of the airport assumed it was primarily a nuts and bolts problem involving structures and machines. It is clear, however, that technologies on the scale of D/FW have an important social component from first to last. Many of the problems the airport is experiencing, and in particular the socio-political difficulties, are a consequence of the perceptions held by those who were associated with the airport. They beheld it as a cluster of structural or mechanical problems to be solved by technicians rather than as a complex, interactive, socio-technical system.³⁰

Yet the social element was important even in the construction phase. The engineer responsible for coordinating

³⁰ Tippetts, Abbett, McCarthy and Stratton, the engineering firm that had overall design and construction responsibility for D/FW, is staffed completely by professional engineers. Jack Downey, the Deputy Director of the airport board, is an engineer, and Tom Sullivan, the Executive Director of the airport board, is an experienced physical planner.

the construction effort reported in an interview that the single, most pervasive problem during the construction phase, other than coordinating dozens of subcontractors, was that everyone had "this is the biggest" fever. Everyone wanted to have the longest, the biggest, the heaviest, or the most. That, he argued, was a giant headache. There are claims of the most concrete ever poured on a single project; the most concrete poured in a day; the largest central air conditioning system, and so on.

Another way of classifying technologies is in terms of prescriptive and adaptive categories. (See LaPorte, June 1974, [unpublished] and Zwerling, 1974, for an expansion of this argument.) Prescriptive technologies influence the development of social values and public life. "Adaptive technologies are shaped by human values; their producers respond to changes in social values and alter their design accordingly." (LaPorte, 1974, p. 10.) Adaptive technologies, such as computers or bus-based transport systems, can readily adapt to different social patterns. Prescriptive technologies, on the other hand, have an image of future society embedded in their design. It seems clear that the designers of D/FW had a vision of the future of air travel and air transport. As we have indicated, investment in an

undertaking like D/FW is necessarily very great, and the tendency--particularly in the case of a publicly funded, prescriptive technology--is to use public authority to coerce people into changing their behavior in order to use the technology.

We have argued that visions of the future are not likely to be particularly accurate. We have implied that attempts to control the future will, at best, be frustrating and, at worst, tyrannical. Therefore, large-scale, prescriptive technologies should be avoided whenever possible. In order to do so, we have suggested that flexibility is the crucial design imperative. The policy-maker, planner and designer must always return to questions of reversability: alternative use for land, structure, and machines, and capacity for contraction as well as expansion.

Finally, we may hypothesize that those who did plan the airport were using an improper or inappropriate view, a narrow rather than a broad perspective, which in turn has been partially responsible for some of the aforementioned problems. It seems to us that if these problems are attacked with the same narrow perspectives, further problems will ensue. Again, the solutions will not be appropriate, and the cycle may continue for quite some time as

the enterprise staggers under technical, financial, and political difficulties.

It is clear that this report has been a baseline effort, as we suggested at the outset. Many questions and problems are still unresolved. The financial difficulties will not be easily resolved. In a period of economic depression, the airlines, the surrounding local governments, and the airport board will be pressed for ways to generate revenue and prevent D/FW from going more into the red. For example, we discovered recently that D/FW, probably in hope of easing the revenue squeeze, is opening some land within its boundaries for private development. This will diminish, of course, the aesthetic and functional power of the airport's master plan. In short, this choice further diminishes the plan's hold on the future.

The litigations growing out of the Love Field controversy and Airtrans are potentially crippling to D/FW and are likely to create new political schisms between the cities of Dallas and Fort Worth. (Dallas Morning News, January 9, 1975). Questions remain about the impact of international routes on the difficulties at D/FW and on the region. So, too, questions

about the consequence of a considerably overestimated future for air cargo persist. Questions regarding the future of STOL transport as it relates to D/FW, the region, and the regional airport concept go unanswered.³¹

³¹ We are not able to accomplish as much as we had hoped in regard to STOL. But when LaPorte's study of Ohio is completed, we will have the other half of the puzzle and will be able to make some conceptual connections between his work and our own.

INTERVIEW SCHEDULE

Acker, Ed. Vice-President, Braniff International Airlines.

Burnett, Pat, Council for Advance Transportation Studies,
Austin, Texas

Deakens, Mrs. K., personal secretary to Amon G. Carter.

Dean, Ernest, Executive Director, Dallas/Fort Worth Regional
Airport.

Dunlay, Professor William, Council for Advance Transpor-
tation Studies, Austin, Texas.

Ford, Fred, Manager of Operations, Dallas/Fort Worth
Regional Airport.

Heath, Robert, Air Transportation Planner, North Texas
Council of Governments.

Holloway, Joan, Examiner, Texas Aeronautics Commission,
Austin, Texas.

Jarrett, Richard, Manager of Surtran.

Kelley, Jim, Chief Engineer in Charge of Construction,
Dallas/Fort Worth Regional Airport. Also associated
with the firm of Tippetts, Abbett, McCarthy, Stratton
Design Engineers.

King, Roland, Vice-President and founder of Southwest Air-
lines.

Macredy, Howard, Aviation Director, City of Dallas, Texas.

Maxhim, Ken, Design Engineer, DOCUTAL Corporation.

Means, Professor Robert C., School of Law, University of
Texas, Austin, Texas.

Murphy, Charles, Director, Texas Aeronautics Commission,
Austin, Texas.

Myers, George L., Field Representative, Southwest Region,
Civil Aeronautics Board, Fort Worth, Texas.

Preston, Lloyd, Aviation Director, City of Fort Worth, Texas.

Riddell, Charles, Environmental Protection Agency, Hazardous Materials Division, Dallas, Texas.

Rogers, Billy, Texas Highway Department, Austin, Texas.

Shaw, Jim, Research Associates, City and Regional Planning, University of Texas, Austin, Texas.

Sletta, Inez, Transport Planner, Federal Aviation Administration, Dallas, Texas.

Sorrenson, Don, Assistant for Aviation, City of Dallas. Presently employed by Braniff International Airlines as Director of Properties.

Stovall, R. M., Mayor, City of Fort Worth, Texas. Also, member of Dallas/Fort Worth Regional Airport Board.

Texas Water Development Board, Austin, Texas. (Discussed with several persons the problems relating to an aquifer beneath the Dallas/Fort Worth Regional Airport area.)

Thompson, John, Director of Transportation, North Texas Council of Governments.

Tubbs, Kenneth, Transportation Manager, Chamber of Commerce, Dallas, Texas.

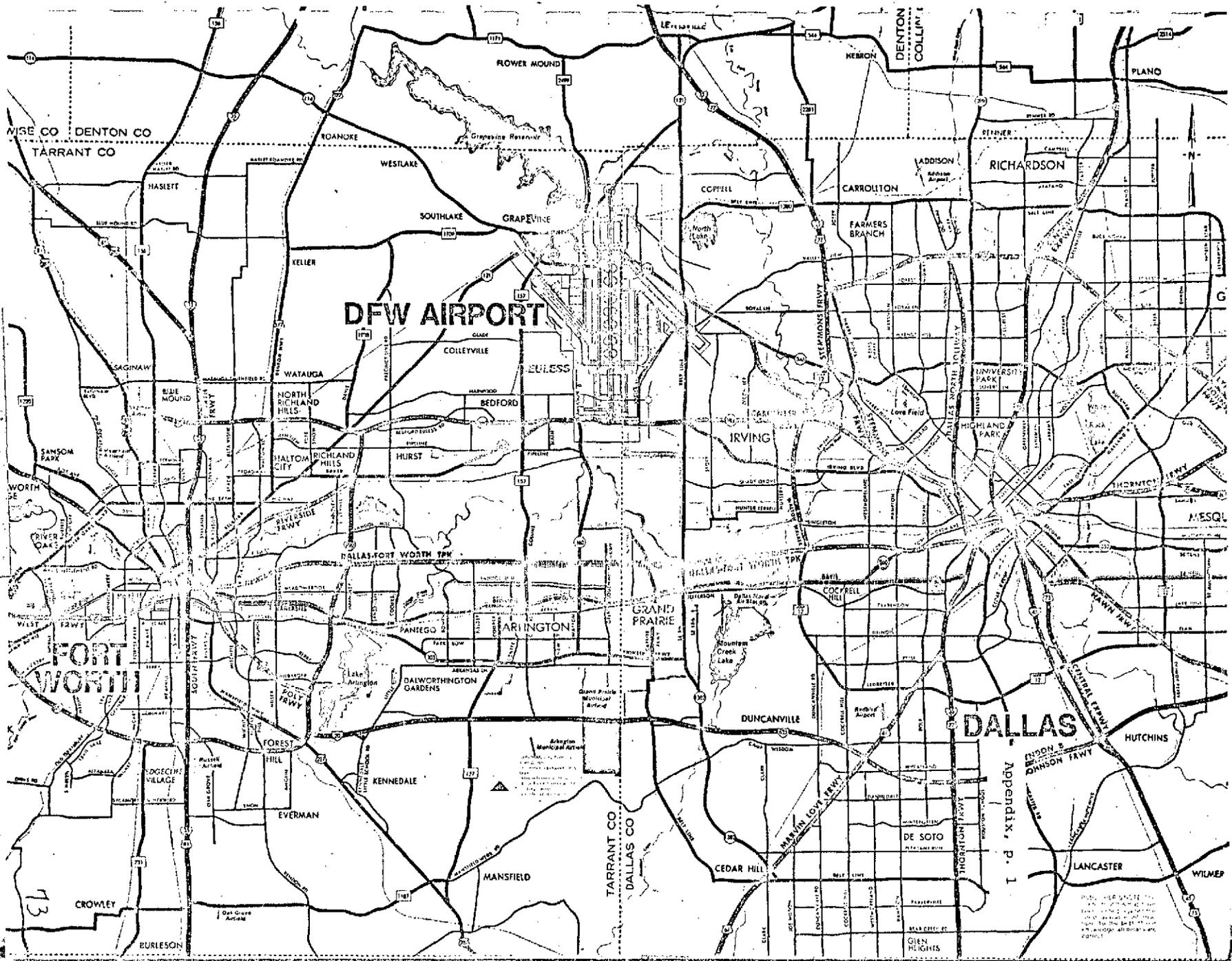
Wegnor, Bob, Director of Regional Planning, North Texas Council of Governments.

Wise, Wes, Mayor, City of Dallas, Texas. Also, member of Dallas/Fort Worth Regional Airport Board.

Many of these individuals were interviewed on more than one occasion.

APPENDIX

NOT REPRODUCIBLE



DFW AIRPORT

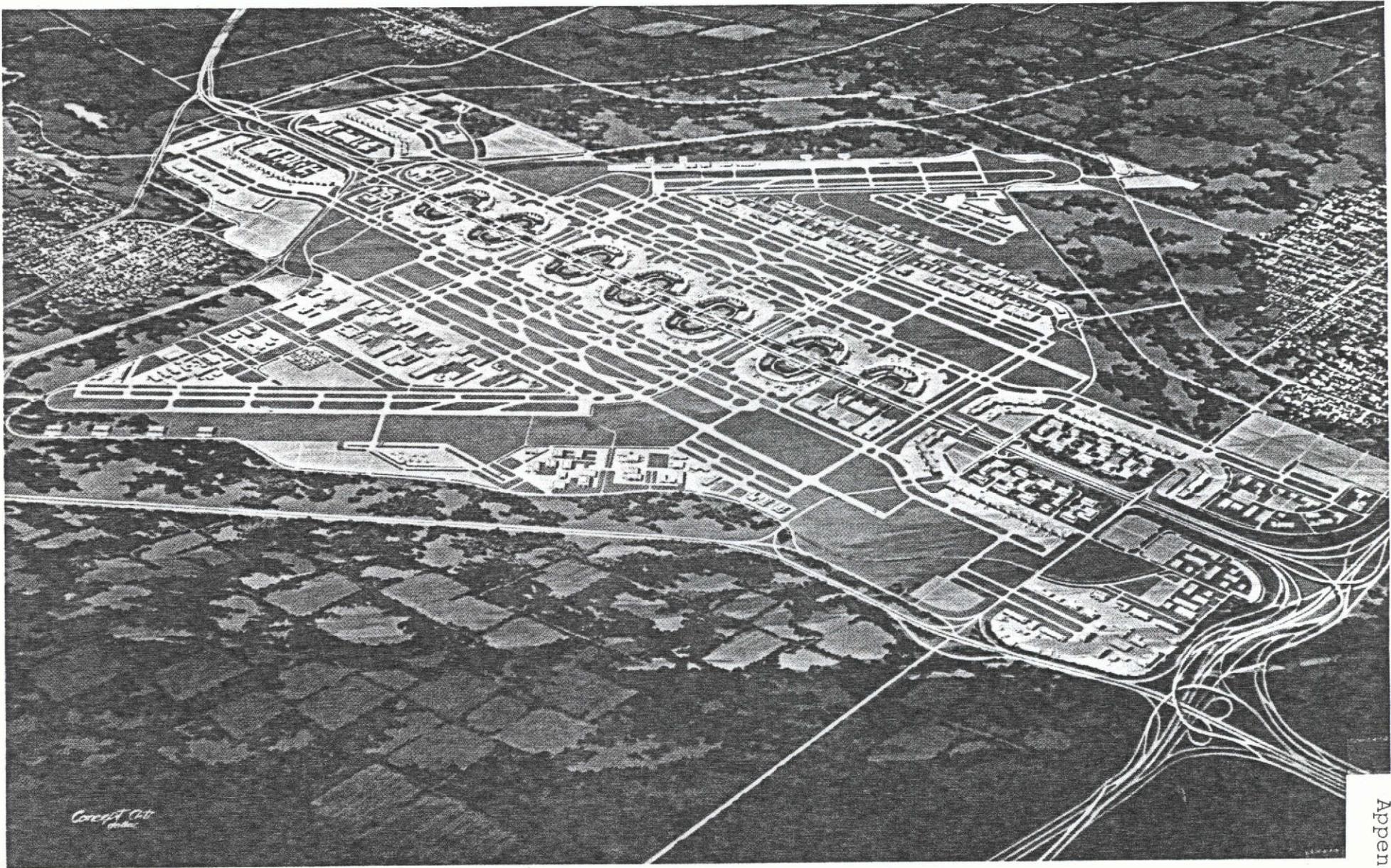
FORT WORTH

DALLAS

Appendix, p. 1

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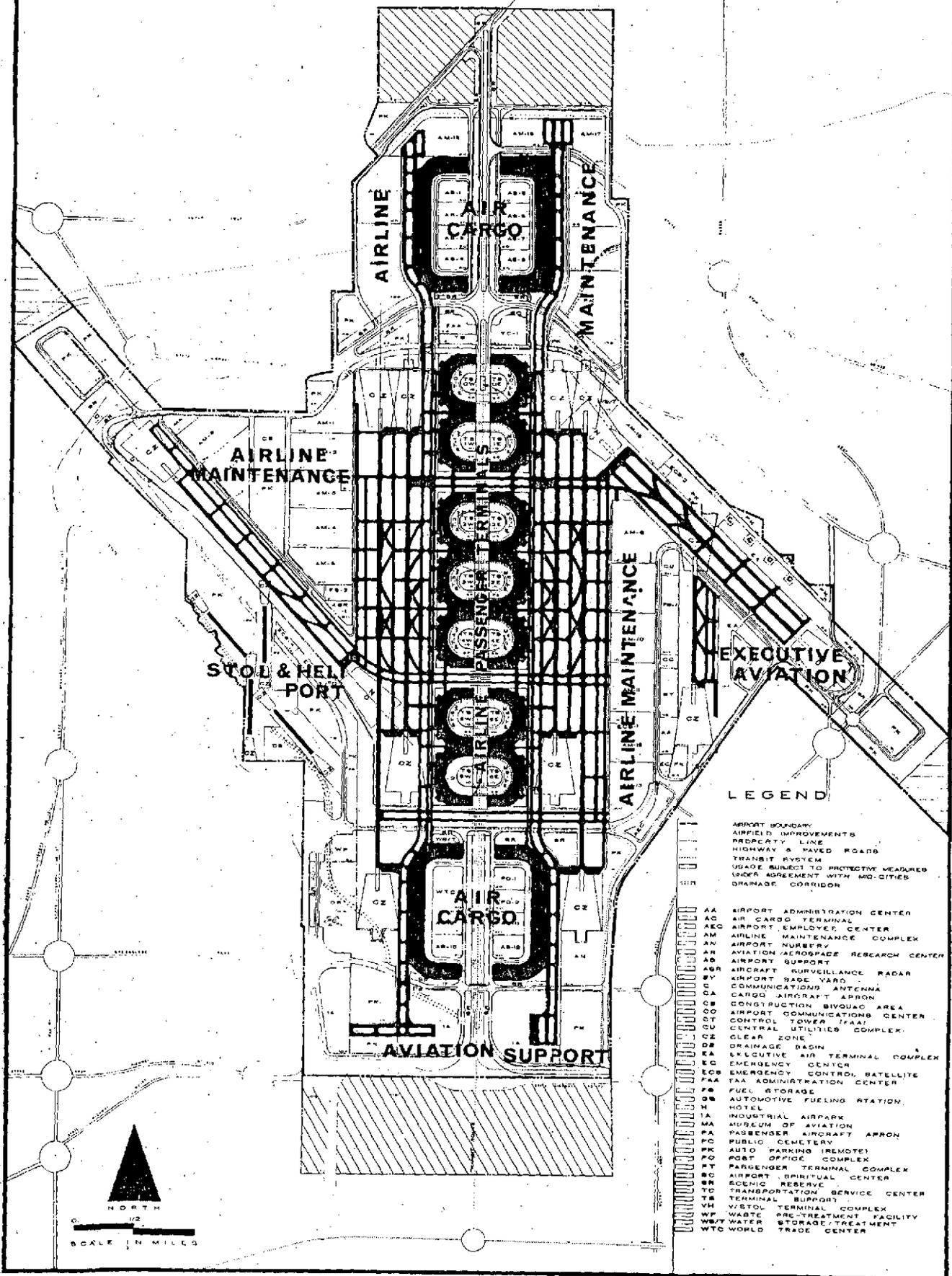
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DALLAS/FORT WORTH AIRPORT - 2001

TIPPETTS-ABBETT-McCARTHY-STRATTON
Airport Planner and General Consultant/Arlington, Texas/New York, New York

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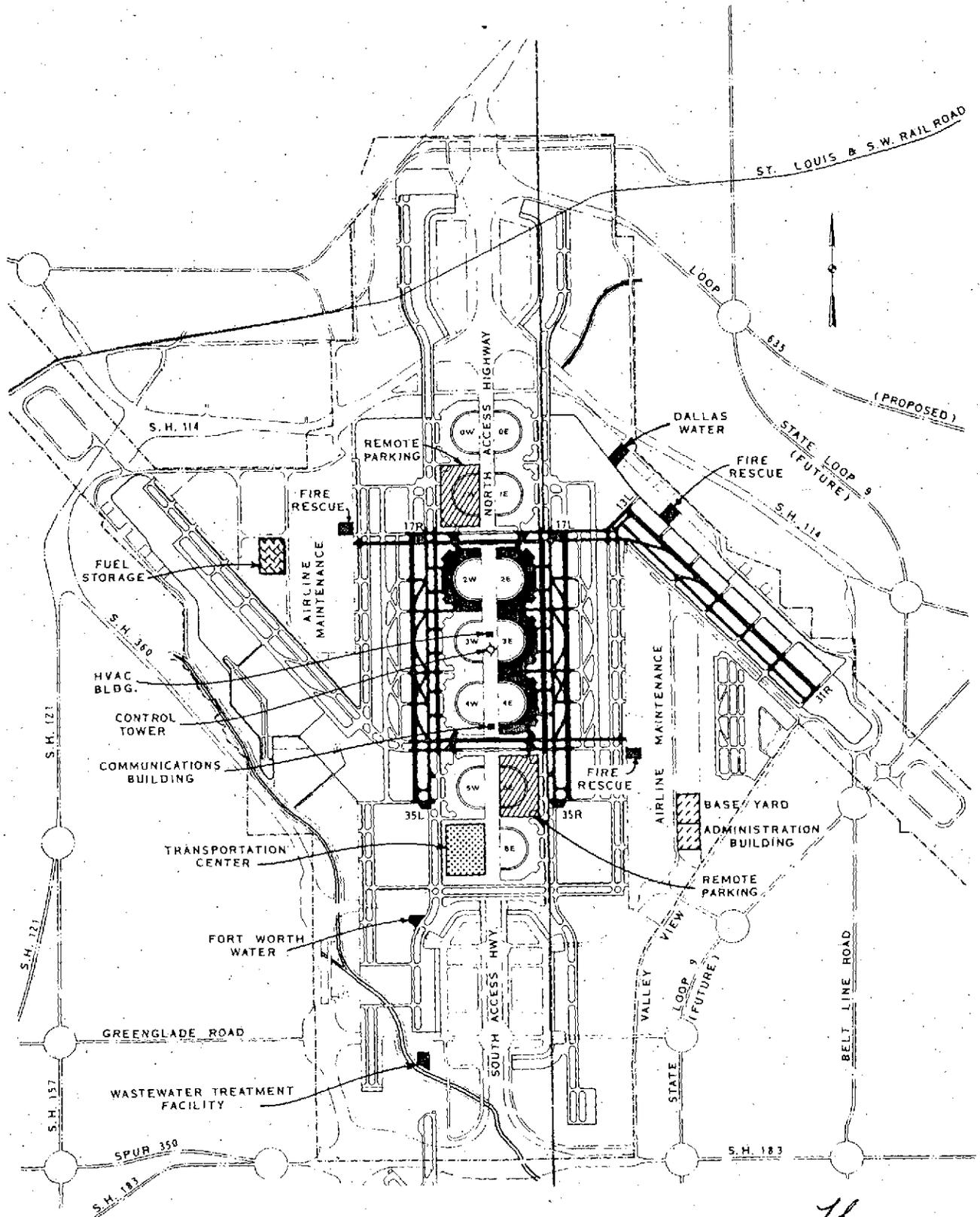


AIRPORT LAND USE PLAN - 2001

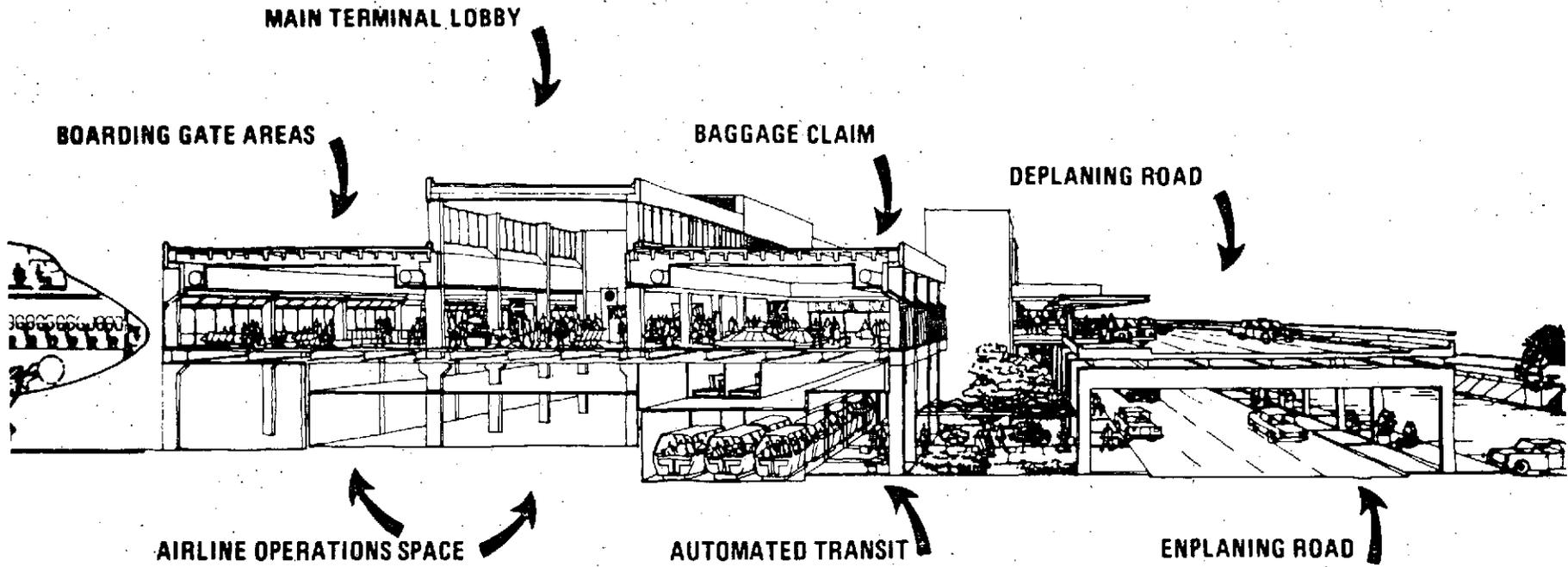
DALLAS - FORT WORTH REGIONAL AIRPORT

PREPARED FOR THE DALLAS-FORT WORTH REGIONAL AIRPORT, USND, AUGUST, 1989, BY LEON FISHER ASSOCIATES, INCORPORATED, SAN FRANCISCO INTERNATIONAL AIRPORT, SAN FRANCISCO, CALIFORNIA

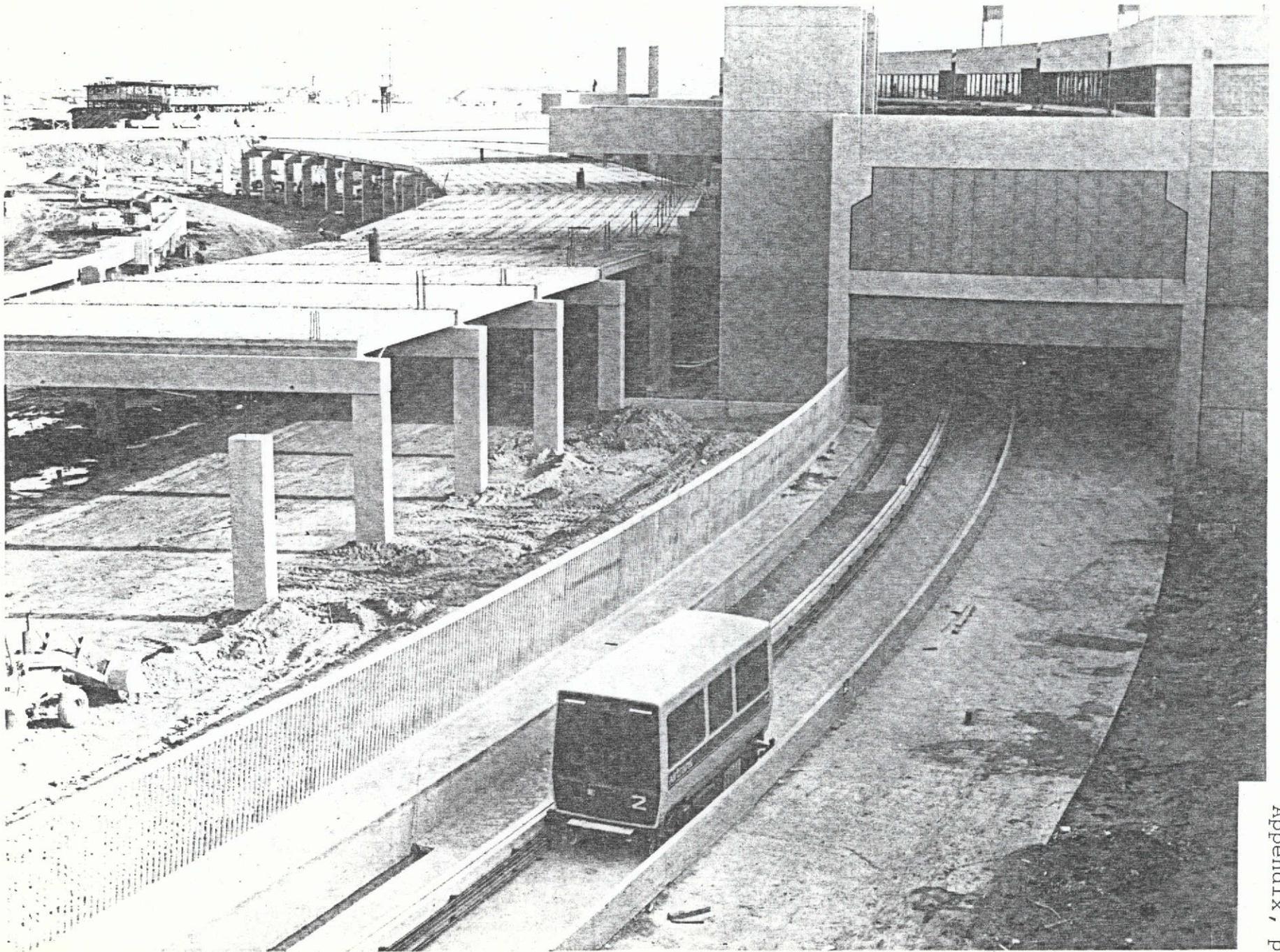
DALLAS-FORT WORTH REGIONAL AIRPORT FIRST STAGE DEVELOPMENT



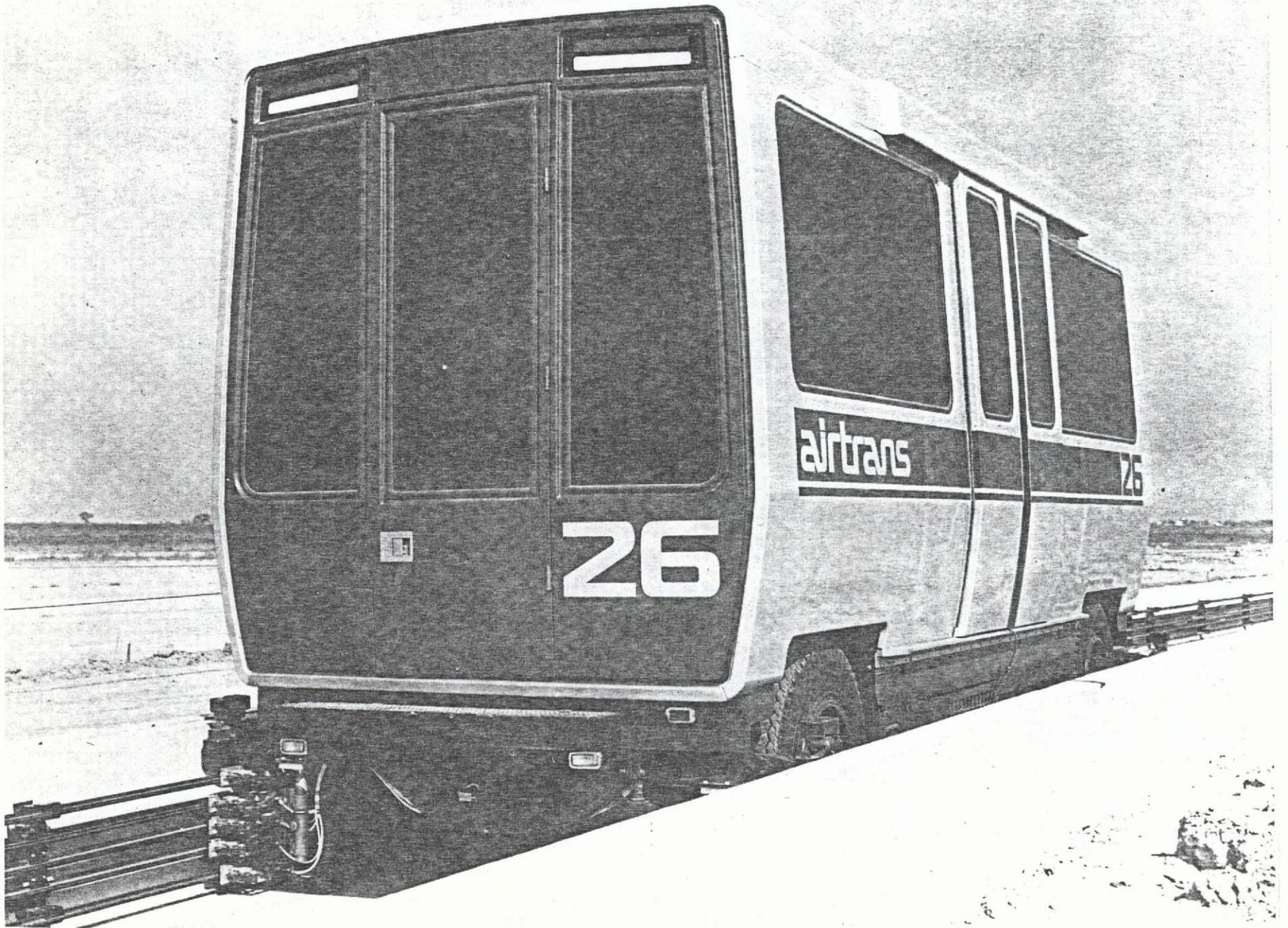
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Airtrans Passenger Vehicle 2 in 2W



Airtrans Vehicle 26

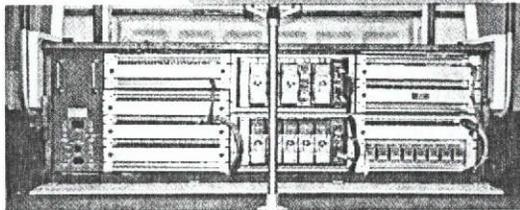
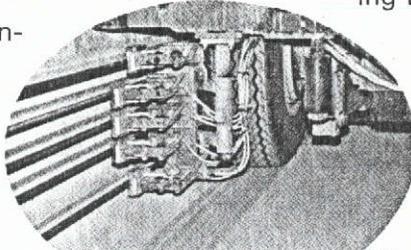
19

GRS Controls automate personal transit system at Dallas/Ft. Worth Airport

A GRS computer-interfaced electronic control system ensures uniquely effective operation for this automated personal transit system.

The GRS system controls all vehicle operations: speeds, braking, protective separation, switching, and station and vehicle doors.

The vehicles pick up power and control information from rails along the guideway.

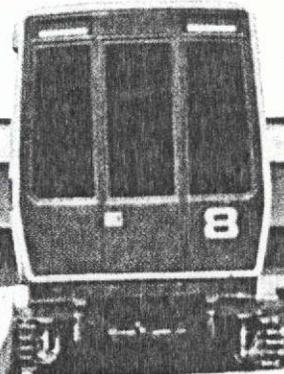


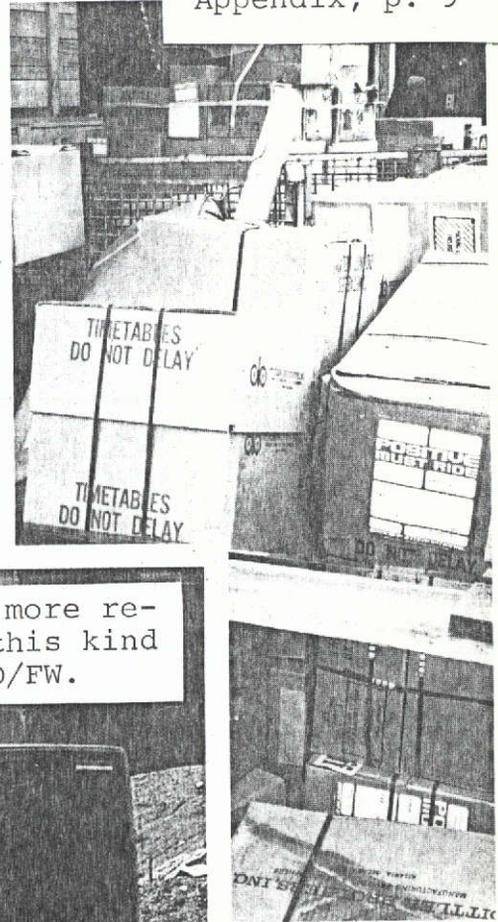
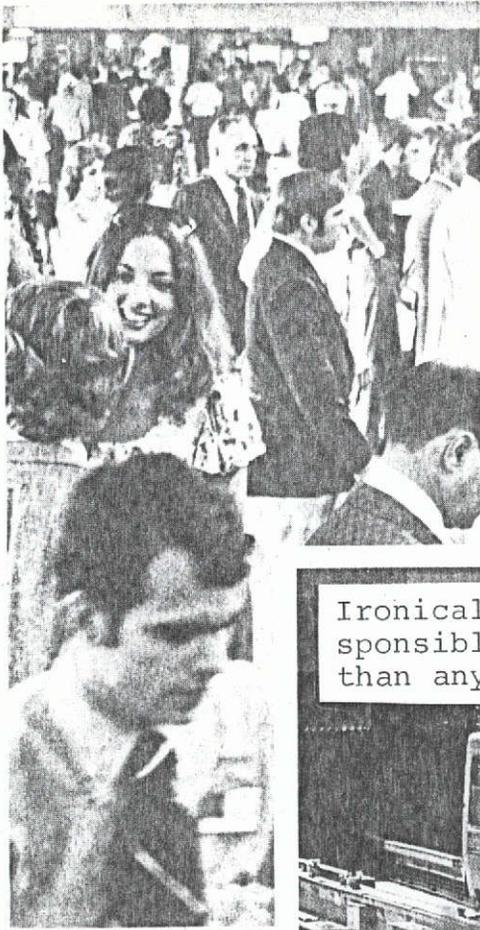
▲ The onboard automation equipment is in a case beneath a luggage storage shelf (shown here removed).

The automation system operates 68 "Airtrans" vehicles over 13 miles of guideways.

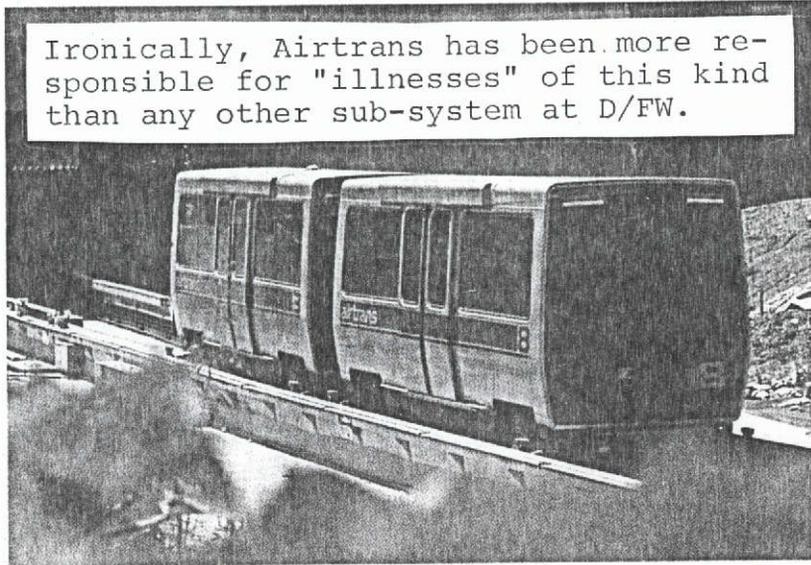
Programmed speeds provide smooth, comfortable station stops and starts.

GRS transit control systems are serving Boston, Chicago, Cleveland, New York, Staten Island, and Toronto . . . and will soon serve Washington, D.C. GRS controls were on board the original Disneyland monorail and the Seattle monorail.

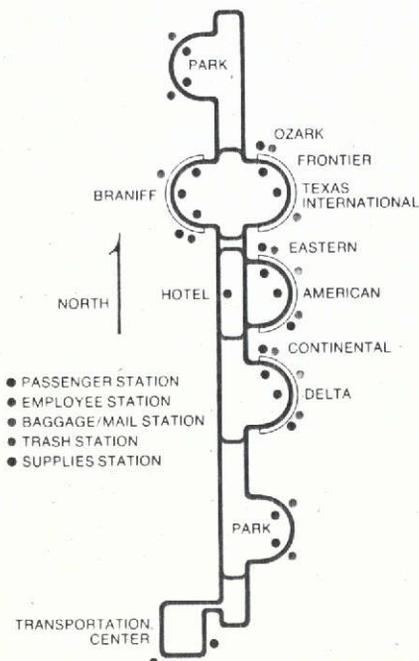




Ironically, Airtrans has been more responsible for "illnesses" of this kind than any other sub-system at D/FW.



Airtrans cures major terminal illnesses.



The worst part of most flights has nothing to do with airplanes. It's getting to, from and around the airport.

And since the Dallas/Ft. Worth (DFW) Airport is the largest in the world, the potential problems are staggering.

So the ground transportation system here is much more than a people mover. It had to be. It had to be planned integrally, from the outset, as a key element, tying the airport together.

It had to be AIRTRANS—the most complete, fully automatic transportation system in the world. 13 miles of door to door service to 53 doors—provided by 51 AIRTRANS personnel vehicles and 17 utility vehicles. All in a totally controlled environment.

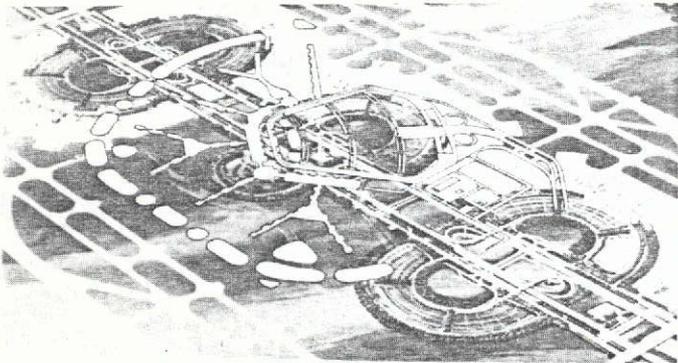
It's a total ground support system that can move 9000 people an hour, 6000 bags an hour and 70,000 lb. of mail an hour. In addition, AIRTRANS removes trash from the terminals and delivers supplies to them. All of it done efficiently and safely, at a smooth 17 mph. With guarantees on trip times and mechanical performance.

AIRTRANS is a complete system package. A one-of-a-kind installation as are other LTV Aerospace transportation systems. And since it is completely electric, it's clean and quiet as well. AIRTRANS doesn't add to one problem while it's solving others.

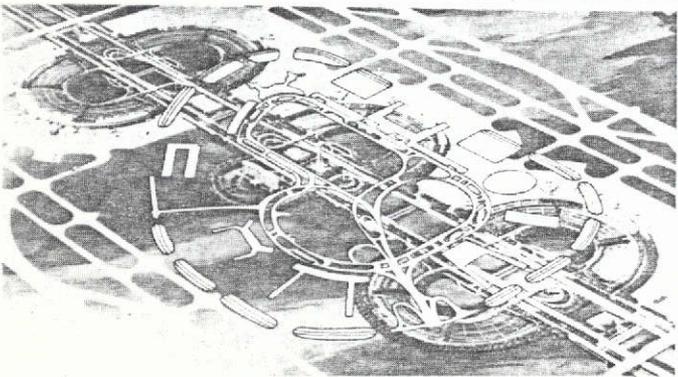
LTV AEROSPACE CORPORATION
GROUND TRANSPORTATION DIVISION

DALLAS/FORT WORTH REGIONAL AIRPORT

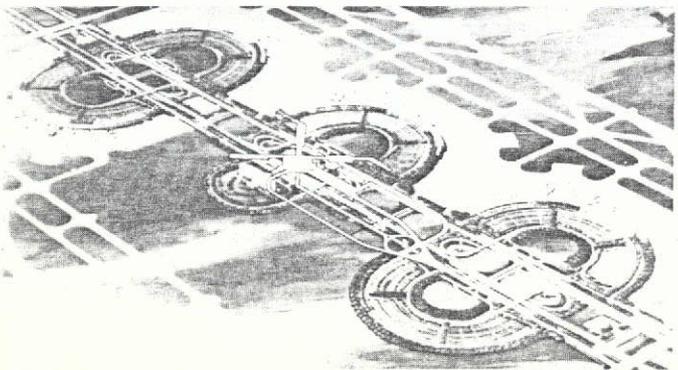
OPENING PHASE 1973
SIZE COMPARISONS



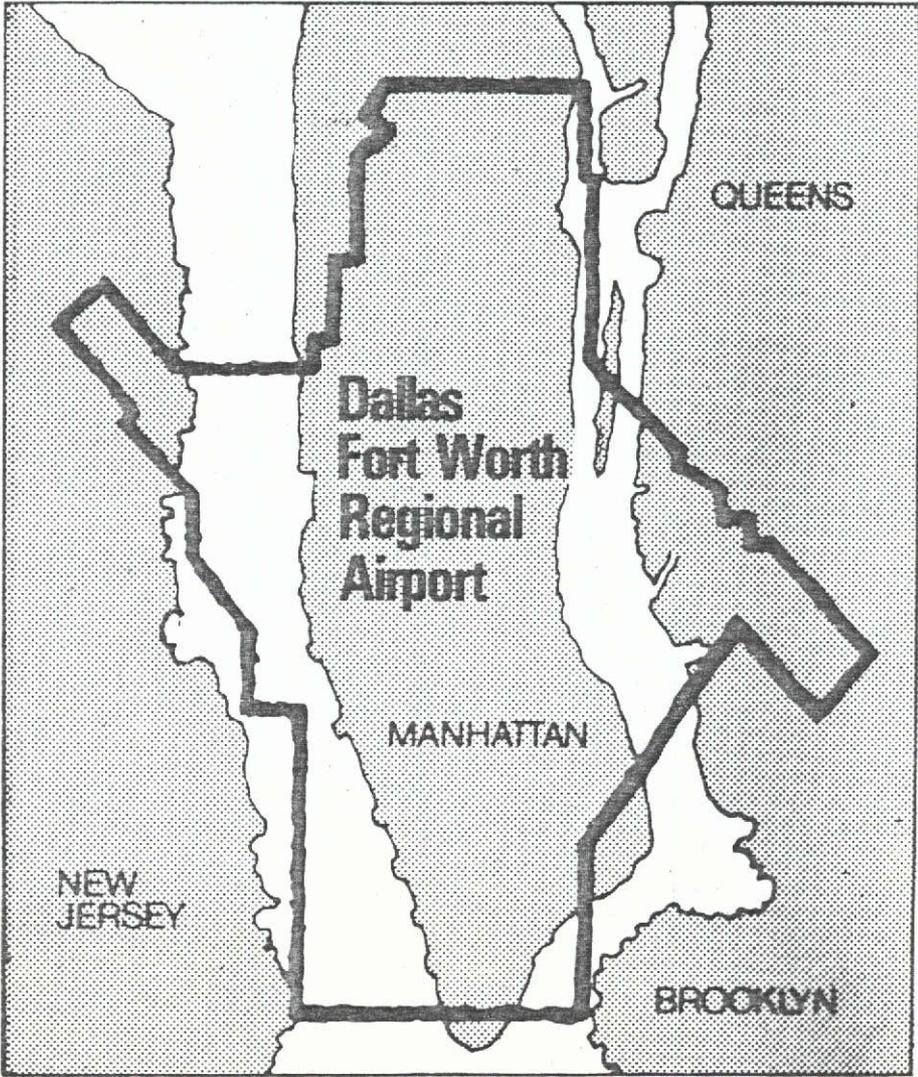
O'HARE FIELD
CHICAGO



JFK
NEW YORK



LOVE FIELD
DALLAS



The Dallas/Fort Worth Regional Airport is operated by the Dallas/Fort Worth Regional Airport Board. The Board was established on September 27, 1965, by enabling legislation whereby the cities of Dallas and Fort Worth became the joint guarantors of this venture.

The Airport Board was authorized and directed to plan, develop, construct, operate, regulate, and police D/FW. It consists of eleven appointed members, seven from the city of Dallas and four from the city of Fort Worth. Initial appointments to the Board by the respective city councils were for terms of two years for six members and terms of four years for five members. All successive appointments are for four year terms. Members of the Board serve without compensation.

Awarding the Airtrans contract to LTV was a controversial decision. In the first round of bidding, five firms substantially overbid the Airport Board estimate of 30 million dollars. In the second round, LTV's bid was not the lowest total bid. The Board, defending the LTV award, stated publicly that LTV was an on-site firm, that LTV had no large contracts pending and local personnel were available to work on the project, and that their design required only off-the-shelf components except for the software. Westinghouse Corporation, the lowest bidder, threatened court action, although this never materialized. One may readily infer that because LTV was a local concern, and because imminent cuts in defense contracts would certainly affect this corporation, it was reasonable, from the perspective of the local political leaders, to award the contract to LTV.

We made several attempts to contact various individuals at LTV associated with Airtrans, including A. L. Head, chief supervisor. In all instances we were refused interviews. We did have, however, some discussions with LTV engineers at D/FW who were working on Airtrans problems.

ENPLANEMENT DATA

	<u>Fitted Data</u> ¹	<u>Airline Estimate</u>	<u>Airport Board</u>	<u>Vorhees</u> ²
1975	10,500,000	11,091,000	7,950,000	11,735,000
1980	12,400,000	15,500,000	13,000,000	15,100,000
1985	14,300,000	21,713,000	Non Avail- able	24,070,000
1990	16,200,000			

¹A linear program which fitted Love Field data for the years 1960-1973, controlling for the impact of GSIA on Love Field enplanement, was used. The fitted data curve was derived from the equation ENPLANEMENTS = TIME x 3.8E05 - .74E09. The resulting R2 was .98.

²The Vorhees consulting group generated projections for many airport uses. But the underlying information and assumptions used by the consultant groups to create their projections were not available to us.

CARGO DATA⁴

	<u>Extended Data</u> ¹	<u>Texas Trans- portation Institute</u>	<u>Airport Master Plan (TAMS)</u> ²	<u>D/FW Press Fact Sheet</u> ³
1975	87,257	111,400	150,000	100,000
1980	123,819	196,700	Non Avail- able	160,000
1985	184,047	361,300	600,000	250,000
1990	264,613	670,200	None Avail- able	

¹ Our very optimistic cargo curve was derived by adding a 6.25 per cent annual increment through 1975 to the actual data for Love Field. An increment of 7.25 per cent was used for the period of 1976-1980, 8.25 per cent for 1981-1985, and 9.24 per cent for 1986-1990. The one per cent increase every five years is to compensate for general economic growth.

² Data prepared by Tippetts, Abbett, McCarthy, Stratton.

³ Data appeared in press kit prepared for opening day ceremonies.

⁴ Figures on airmail operations at Love Field during the period from 1970 to 1973 show a decrease in airmail tonnage from 34,362 to 33,090. The Vorhees study projects 78,880 tons of airmail at Dallas/Fort Worth Regional Airport in the year 1975. This is an increase of 138 per cent over a two-year period.